

Developed as a joint educational project by members of the amateur radio business community in cooperation with the American Radio Relay League.

# Archie's

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# HAM RADIO

## Adventure





# PARENTS' PAGE!

Dear Mom and Dad,

Ham Radio is a doorway to the world! It can help your son or daughter make new friends in faraway places—or right in your hometown. It can also spark an interest in electronics and communications that may lead to a rewarding career. Ham Radio can also help kids get more interested in math (learning electronics formulas), geography (finding on a map the home of someone they contact), even spelling (when Hams use Morse Code instead of voice communications, they spell out their words). Plus, Ham Radio blends naturally with computers, and can be a ticket to success in our high-tech world.

Mainly, though, it's a fun hobby--and kids who get into Ham Radio generally get involved enough that they don't get into other things that can lead to trouble. Getting a Ham license can also help build your child's self-confidence and sense of pride in accomplishment.

Of course, Ham Radio's not just for kids. Adults find plenty of enjoyment in the hobby as well. Your child's teacher should have the name of a local radio club you can contact.

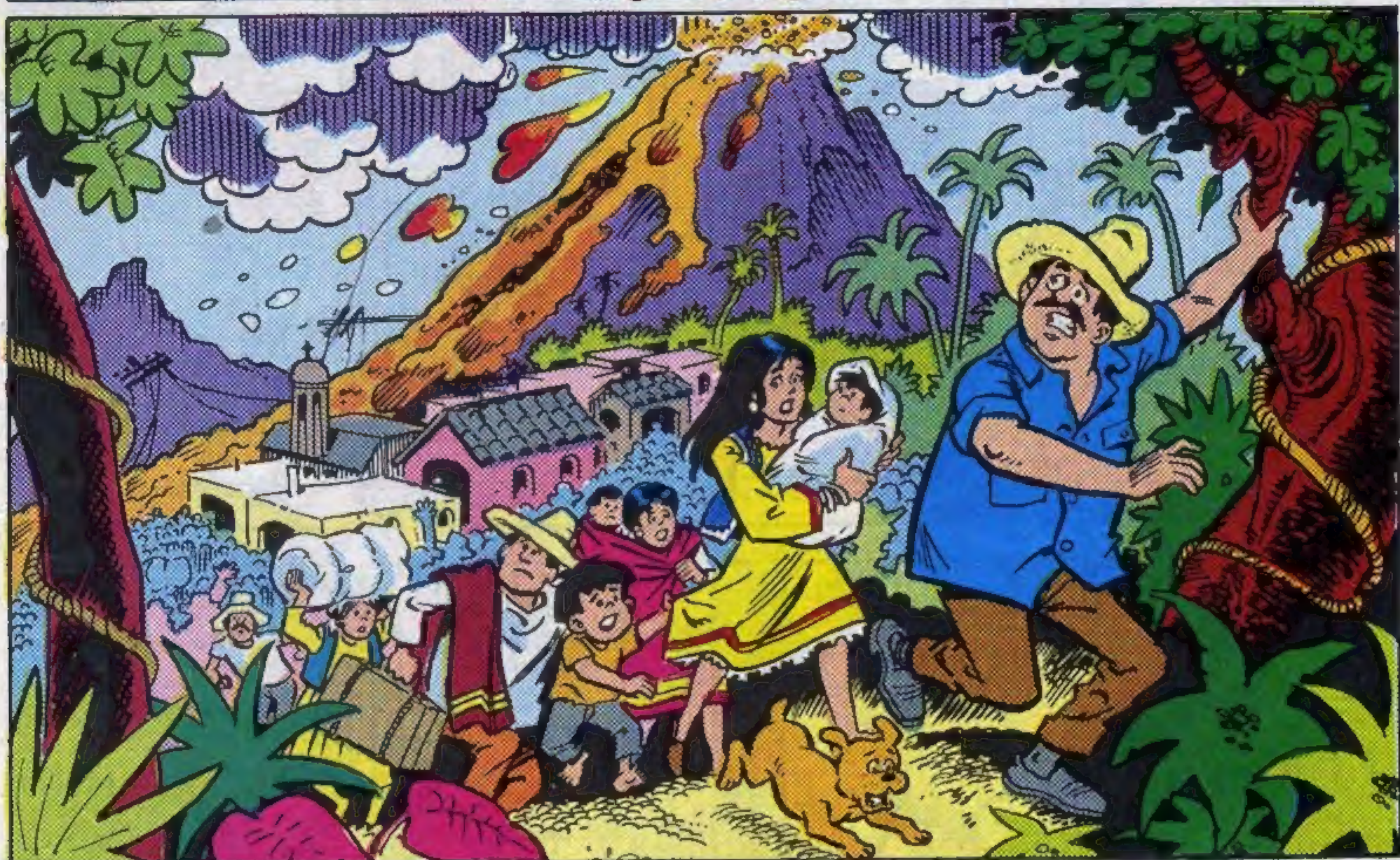
"ARCHIE'S HAM RADIO ADVENTURE" is a joint project of the amateur radio industry and the American Radio Relay League (ARRL), the national Ham Radio organization. The ARRL, founded in 1914, is a non-profit membership association with about 150,000 members nationwide. Its headquarters, in Newington, CT, also serves as headquarters for the International Amateur Radio Union, an umbrella organization of the 125 national amateur radio societies throughout the world. More information is available from ARRL, 225 Main Street., Newington, CT 06111.



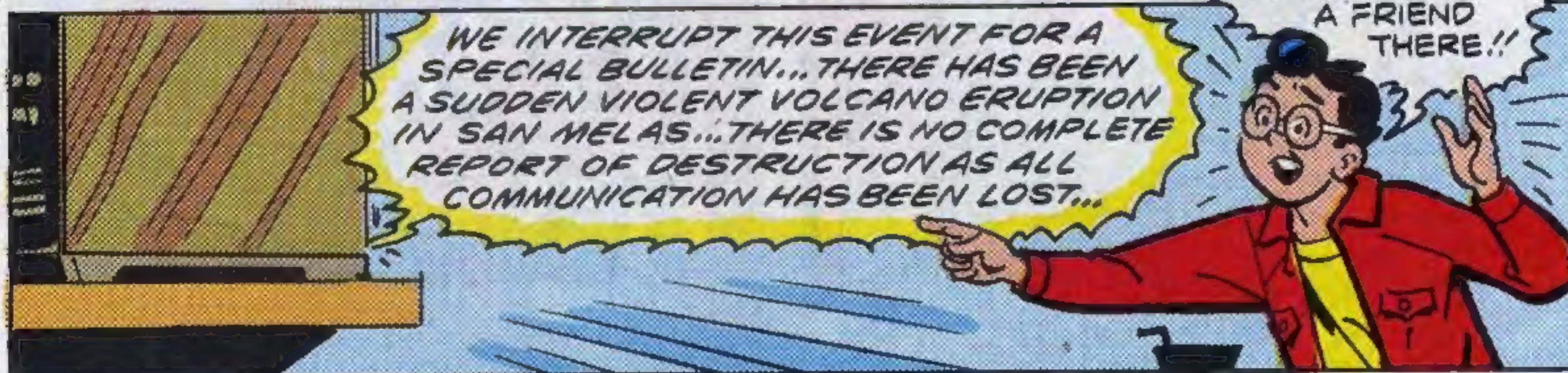




# HAM RADIO ADVENTURE



SCRIPT: BOB BOLLING ART: STAN GOLDBERG & MIKE ESPOSITO LETTERING: ROD OLLERENSHAW COLORING/PRODUCTION: BARRY GROSSMAN EDITORS: VICTOR GORELICK RICHARD GOLDWATER MICHAEL SILBERKLEIT

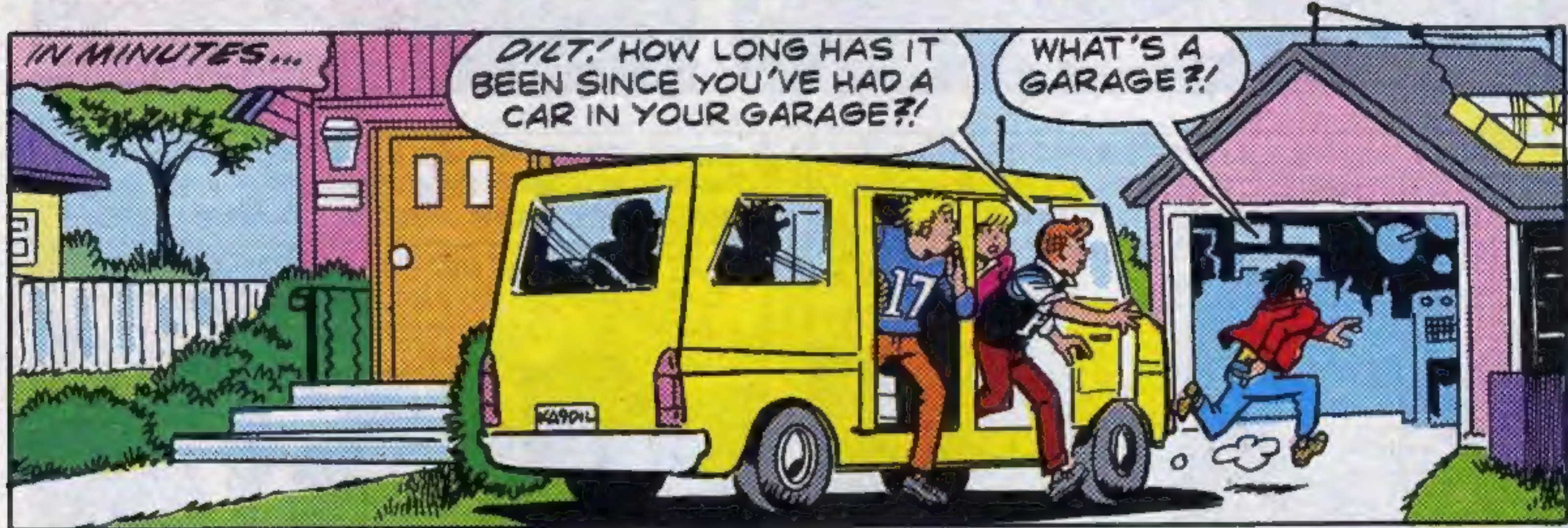
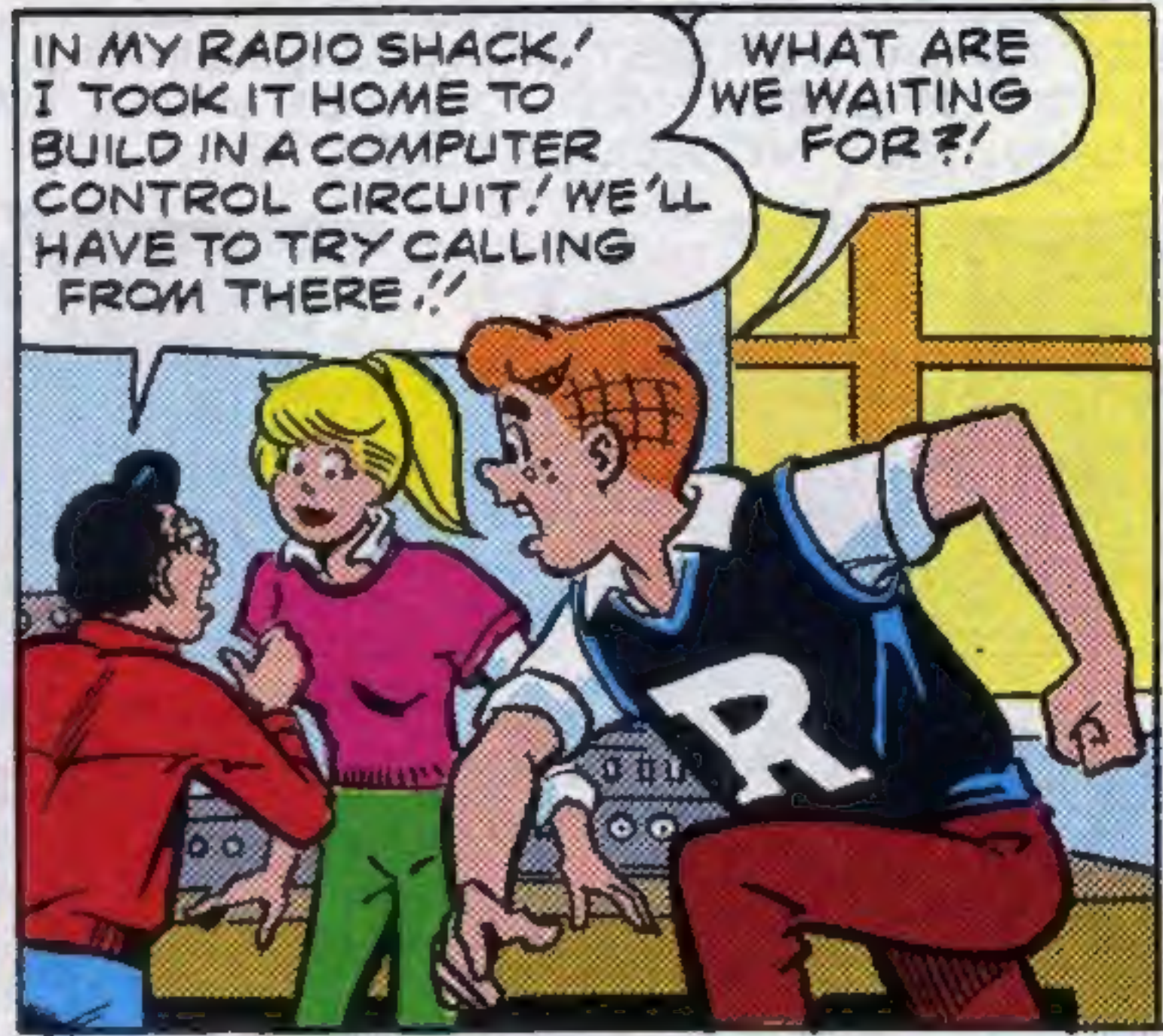


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NOT AS BAD AS FIRST BELIEVED, DILTON...  
A LOT OF STRUCTURAL DAMAGE AND LINES  
DOWN...BUT NO SOULS LOST!...

BUT YOU  
CAN  
ASSIST!



I HAVE MESSAGES HERE FROM  
PEOPLE WITH RELATIVES LIVING  
IN THE STATES WHO MIGHT BE  
CONCERNED ABOUT  
THEIR SAFETY!!

I UNDERSTAND! GIVE  
ME NAMES AND ADDRESSES,  
I'LL TRY CONTACTING  
HAMS WHO CAN HELP...



IN TURN, THOSE HAM OPERATORS WILL  
CONTACT THOSE CONCERNED BY PHONE!

EXCUSE ME WHILE I TRY  
TO GET THROUGH TO SOME  
OF 'EM!!



SOON DILTON HAS CONTACTED HAMS  
THROUGHOUT THE COUNTRY, AND ALL  
THE MESSAGES ARE ON THEIR WAY...

THAT'S  
THE  
LAST  
ONE!

DUH, DILTON, I WANNA ASK  
YOU AN IMPORTANT QUESTION  
ABOUT YOUR RADIO  
CLUB AT  
SCHOOL!!



IF YOUR CLUB  
HAD A MASCOT,  
WOULD IT BE A  
HAMSTER?!



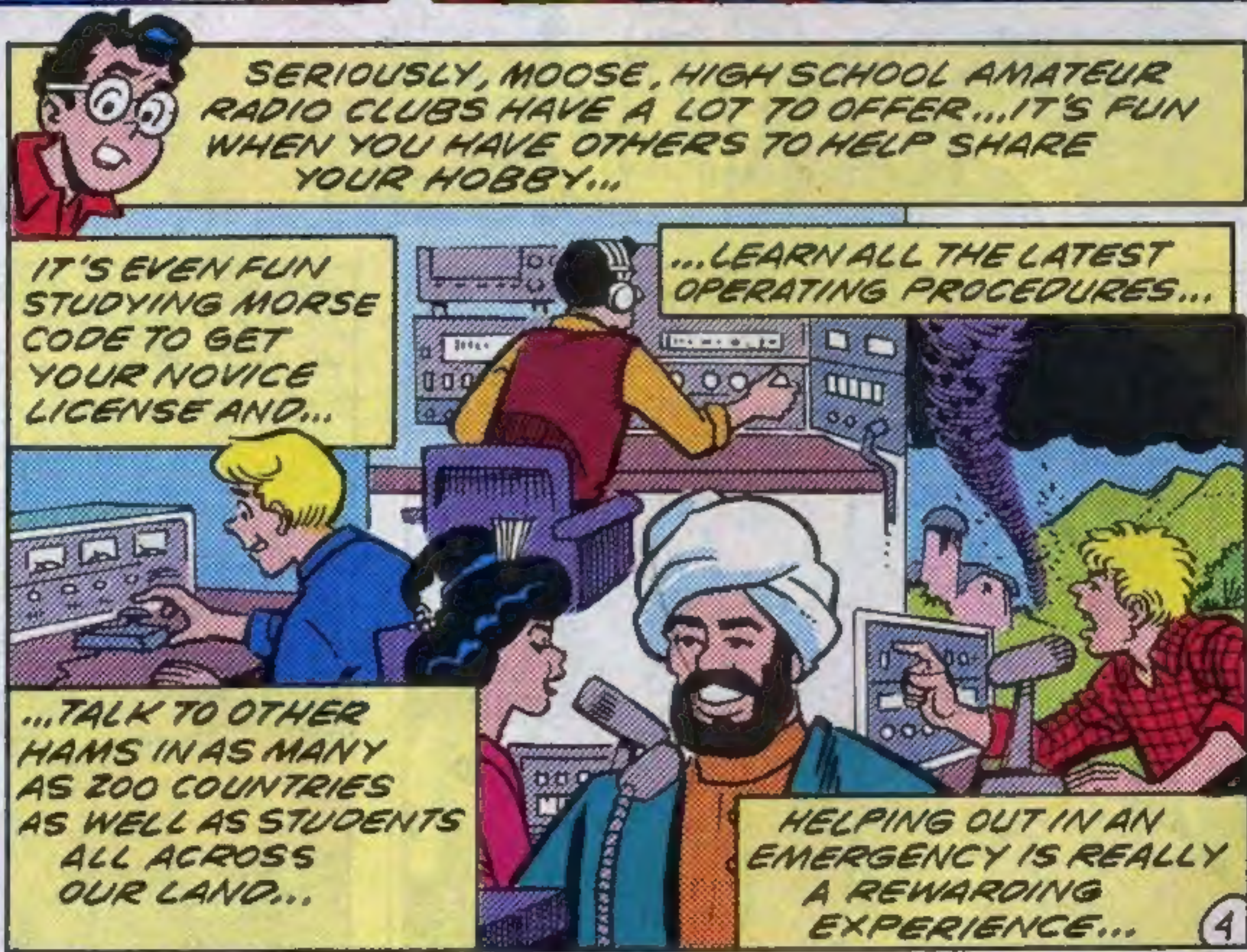
SERIOUSLY, MOOSE, HIGH SCHOOL AMATEUR  
RADIO CLUBS HAVE A LOT TO OFFER...IT'S FUN  
WHEN YOU HAVE OTHERS TO HELP SHARE  
YOUR HOBBY...

IT'S EVEN FUN  
STUDYING MORSE  
CODE TO GET  
YOUR NOVICE  
LICENSE AND...

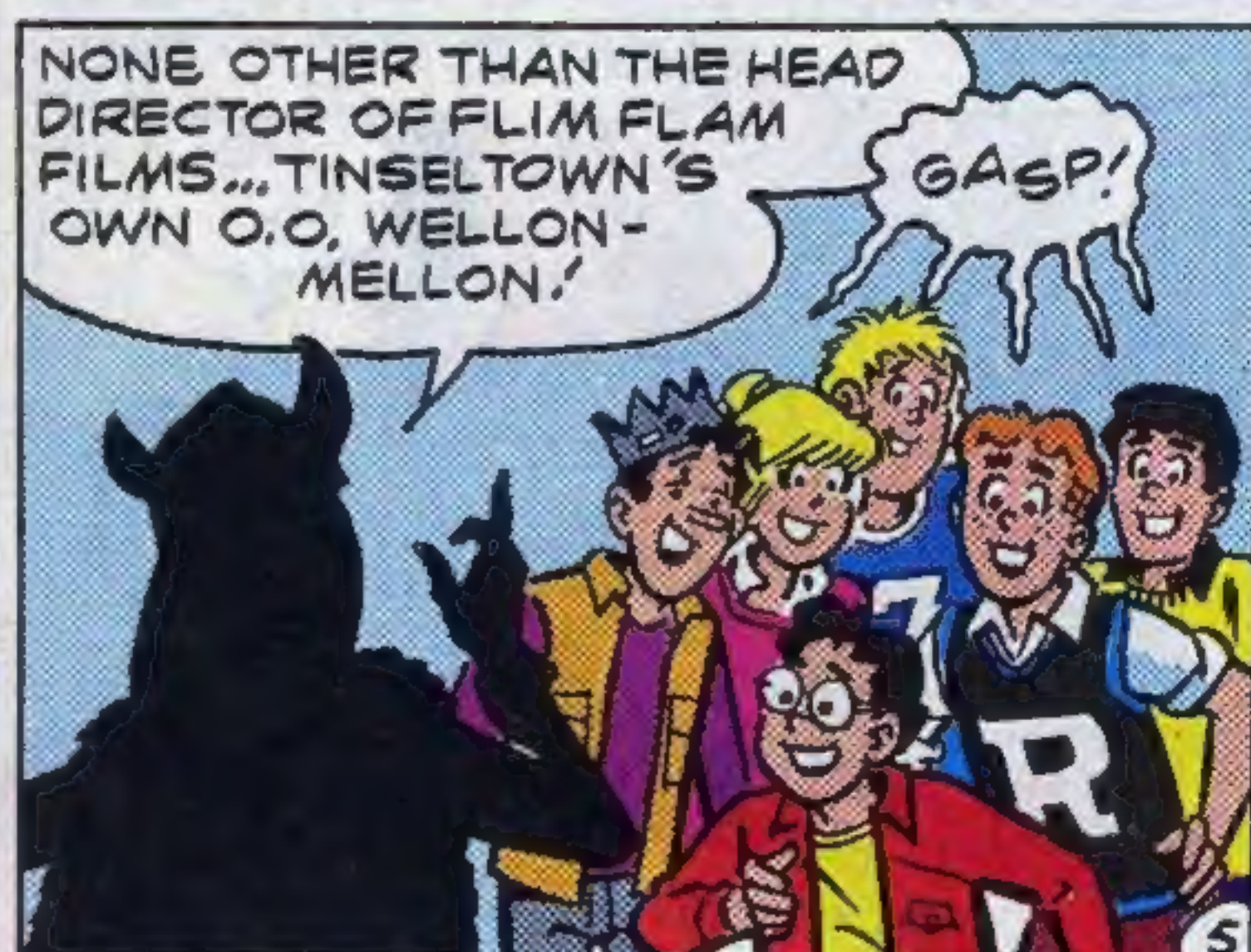
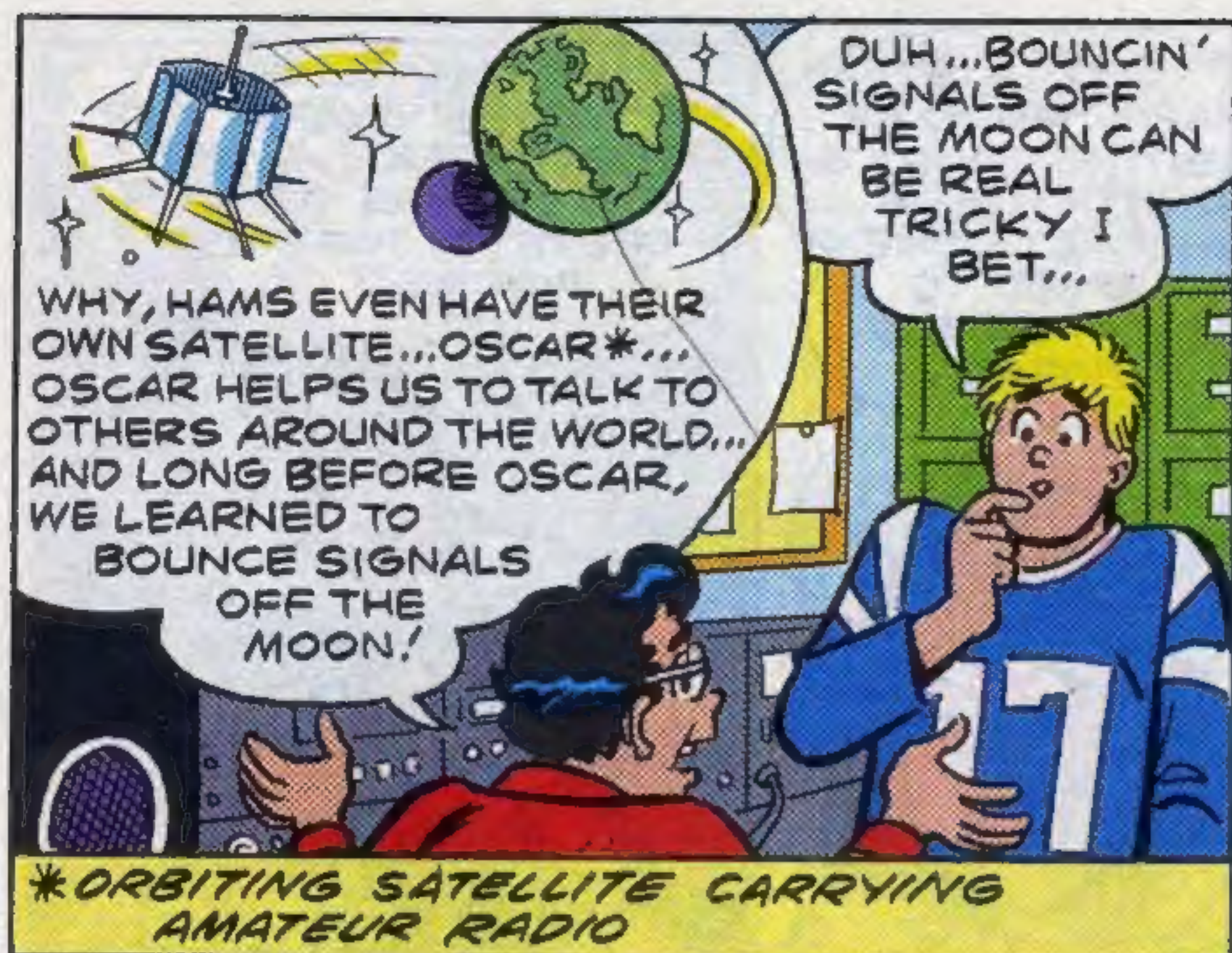
...LEARN ALL THE LATEST  
OPERATING PROCEDURES...

...TALK TO OTHER  
HAMS IN AS MANY  
AS 200 COUNTRIES  
AS WELL AS STUDENTS  
ALL ACROSS  
OUR LAND...

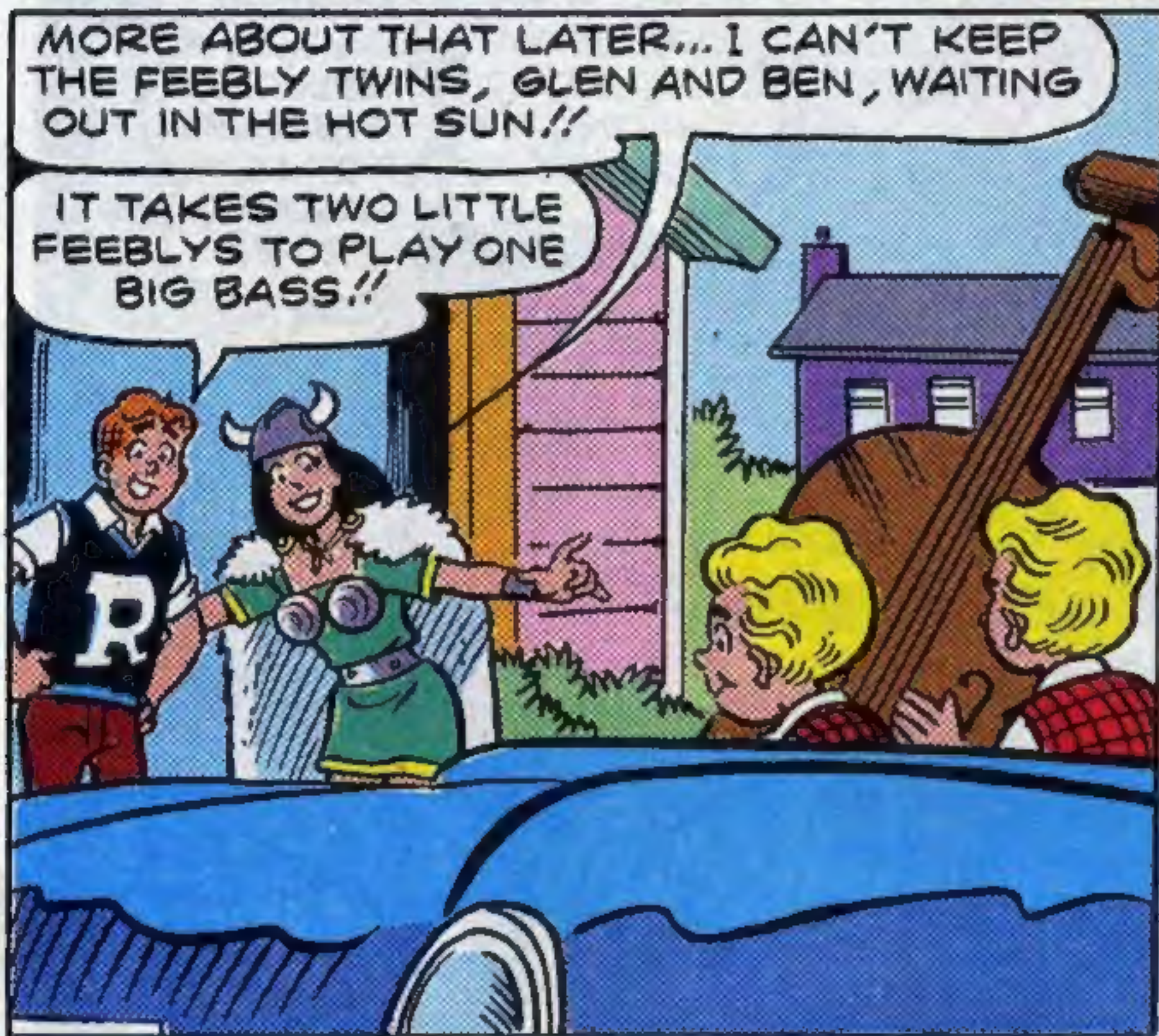
HELPING OUT IN AN  
EMERGENCY IS REALLY  
A REWARDING  
EXPERIENCE...











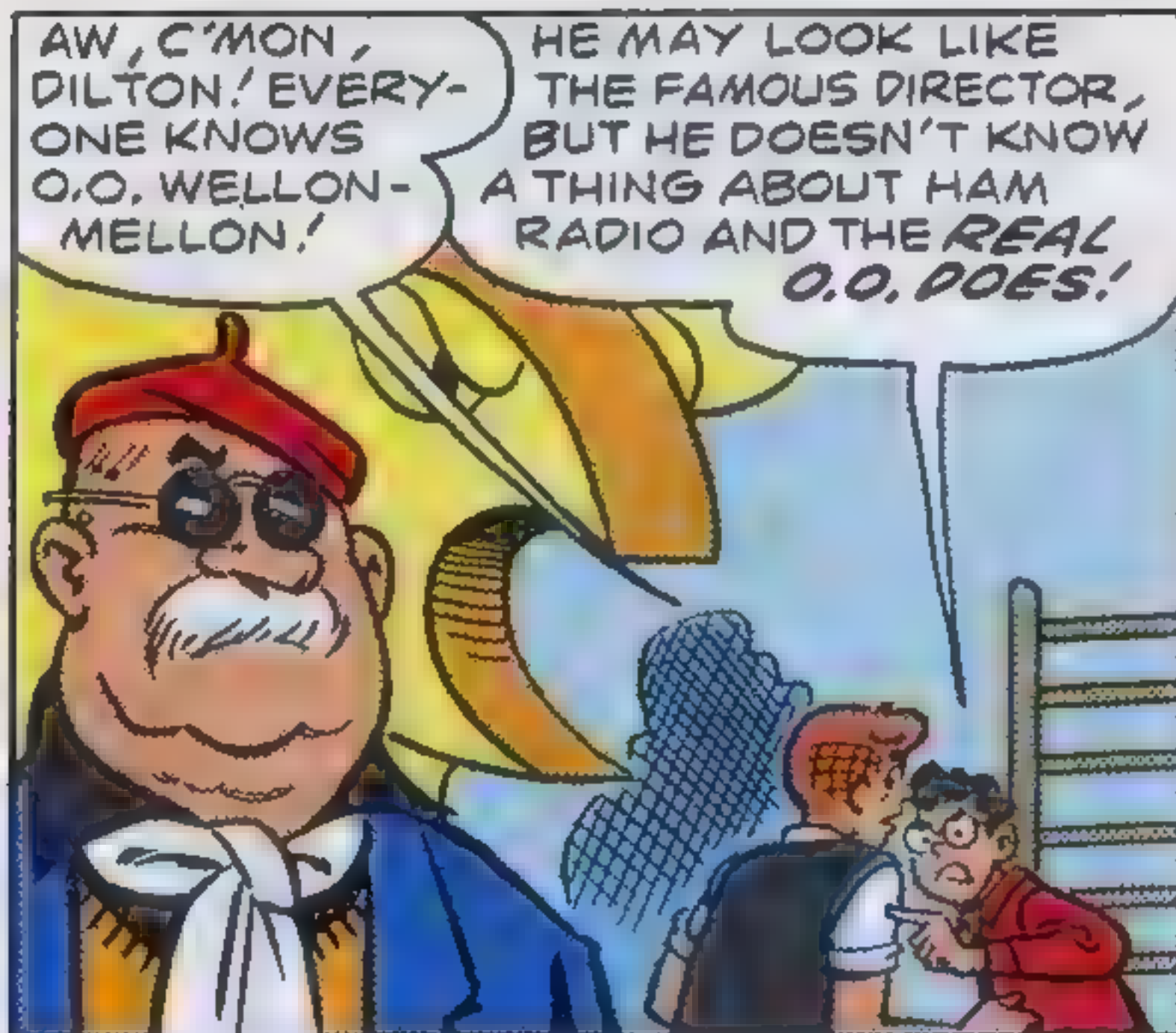






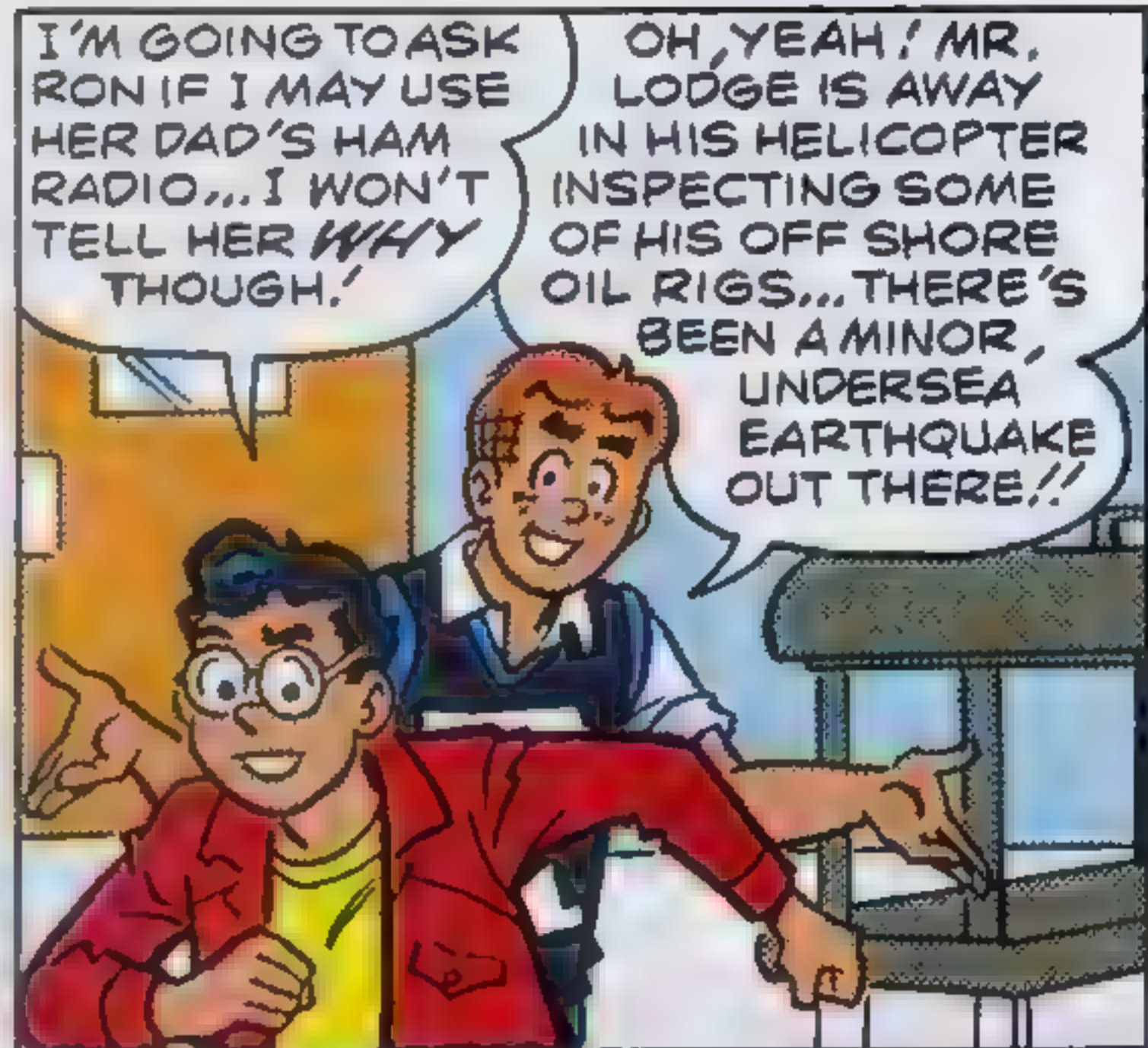






AW, C'MON, DILTON! EVERYONE KNOWS O.O. WELLON-MELLON!

HE MAY LOOK LIKE THE FAMOUS DIRECTOR, BUT HE DOESN'T KNOW A THING ABOUT HAM RADIO AND THE *REAL* O.O. DOES!



I'M GOING TO ASK RON IF I MAY USE HER DAD'S HAM RADIO... I WON'T TELL HER *WHY* THOUGH!

OH, YEAH! MR. LODGE IS AWAY IN HIS HELICOPTER INSPECTING SOME OF HIS OFF SHORE OIL RIGS... THERE'S BEEN A MINOR, UNDERSEA EARTHQUAKE OUT THERE!!



WELL ?!!

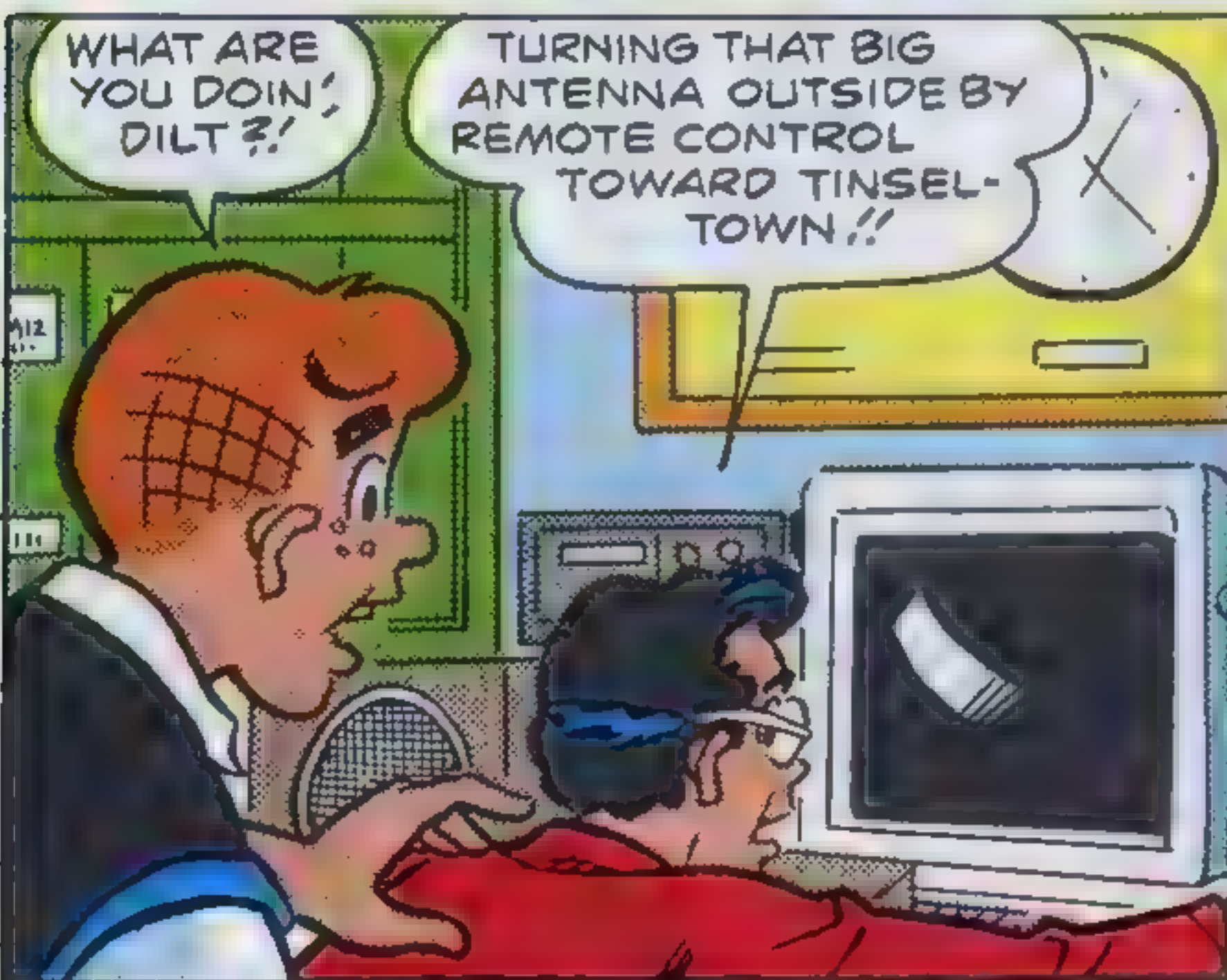
SHE SAID "OKAY" AND THAT SMITHERS WOULD LET US IN!



IN MINUTES...

YES! I'M AWARE THAT HAMS ARE MOST GENEROUS IN MAKING THEIR EQUIPMENT AVAILABLE TO ONE ANOTHER !!!

AND THIS RADIO SHACK HAS ALL THE LATEST!!



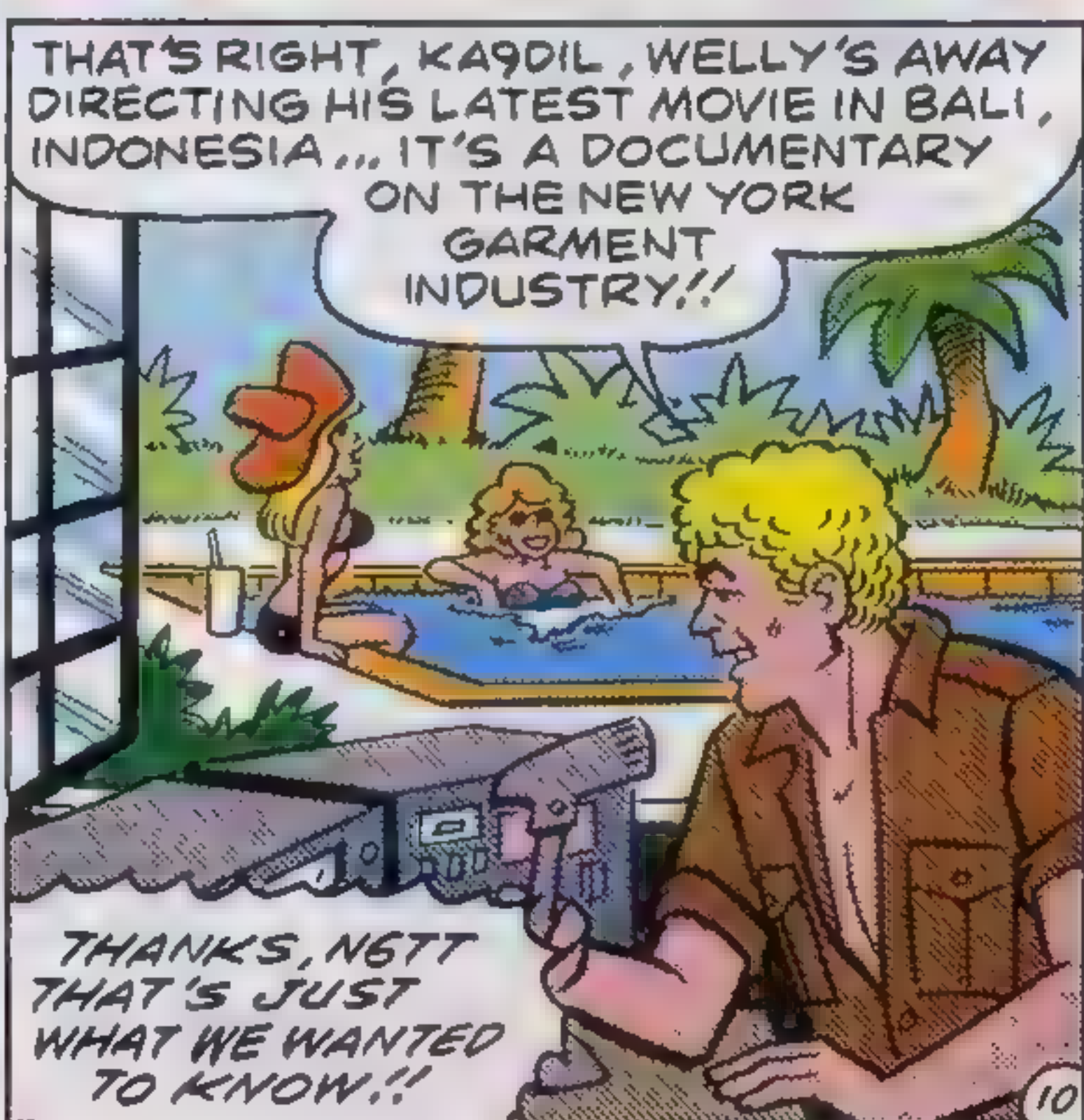
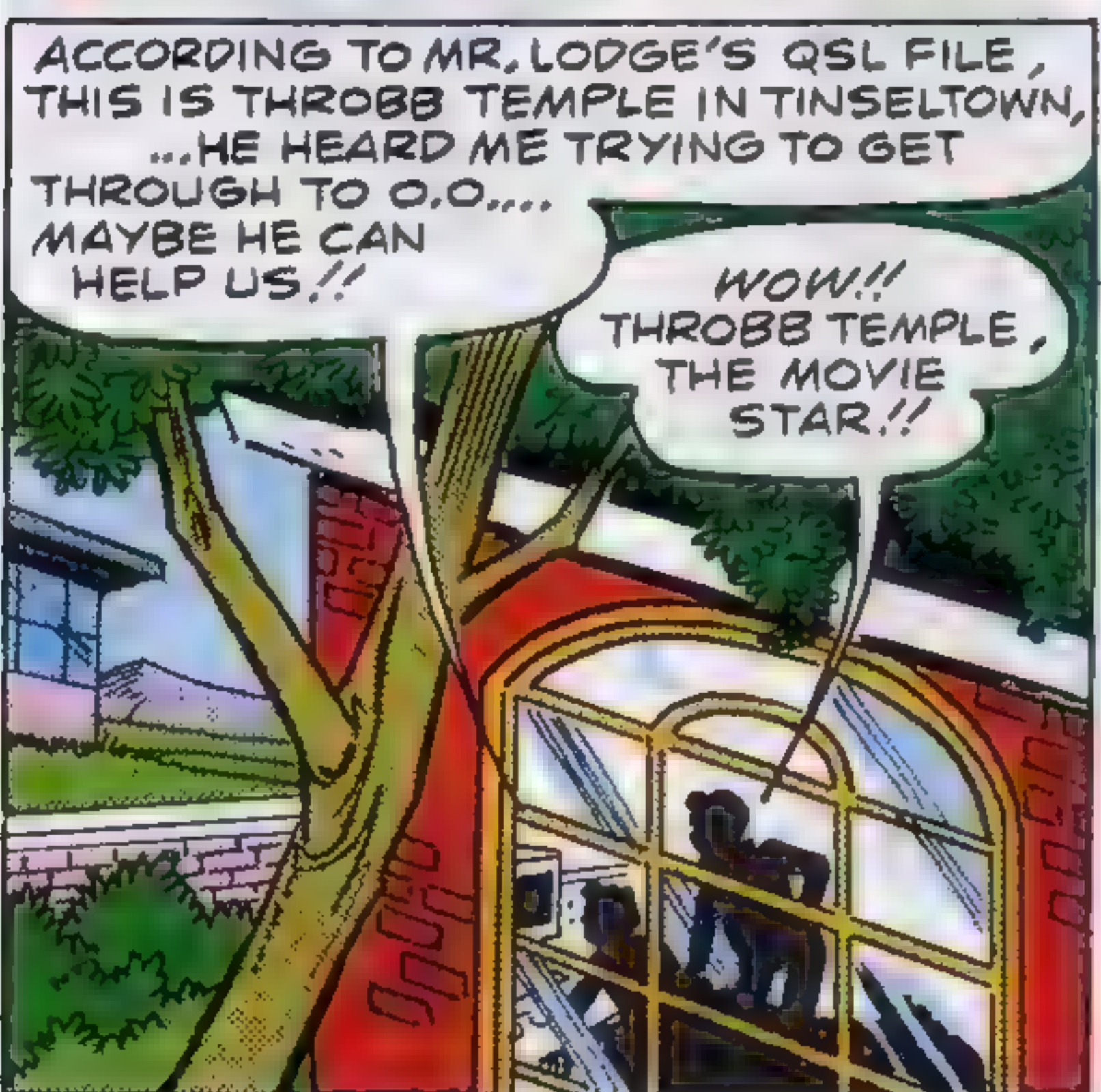
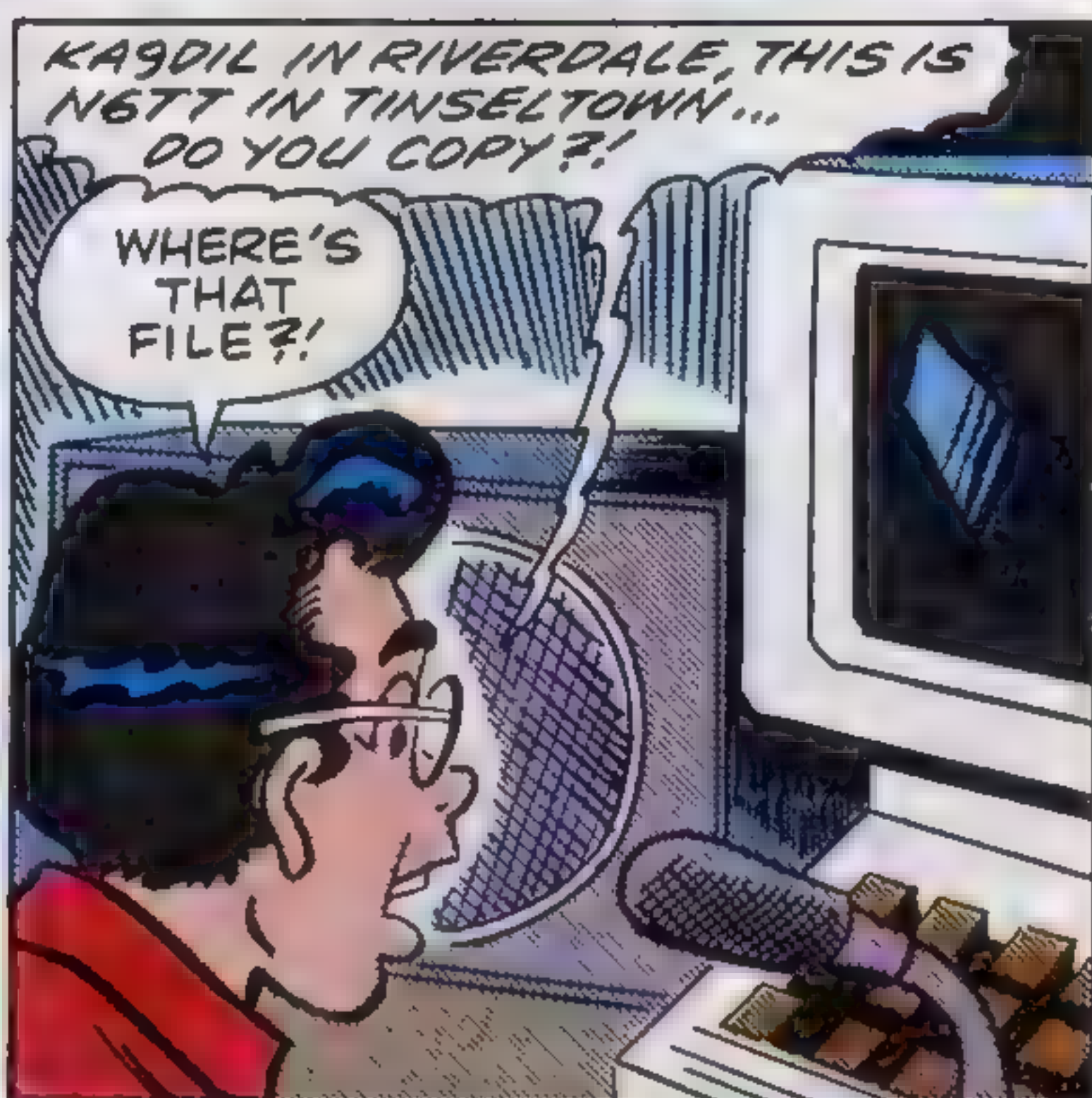
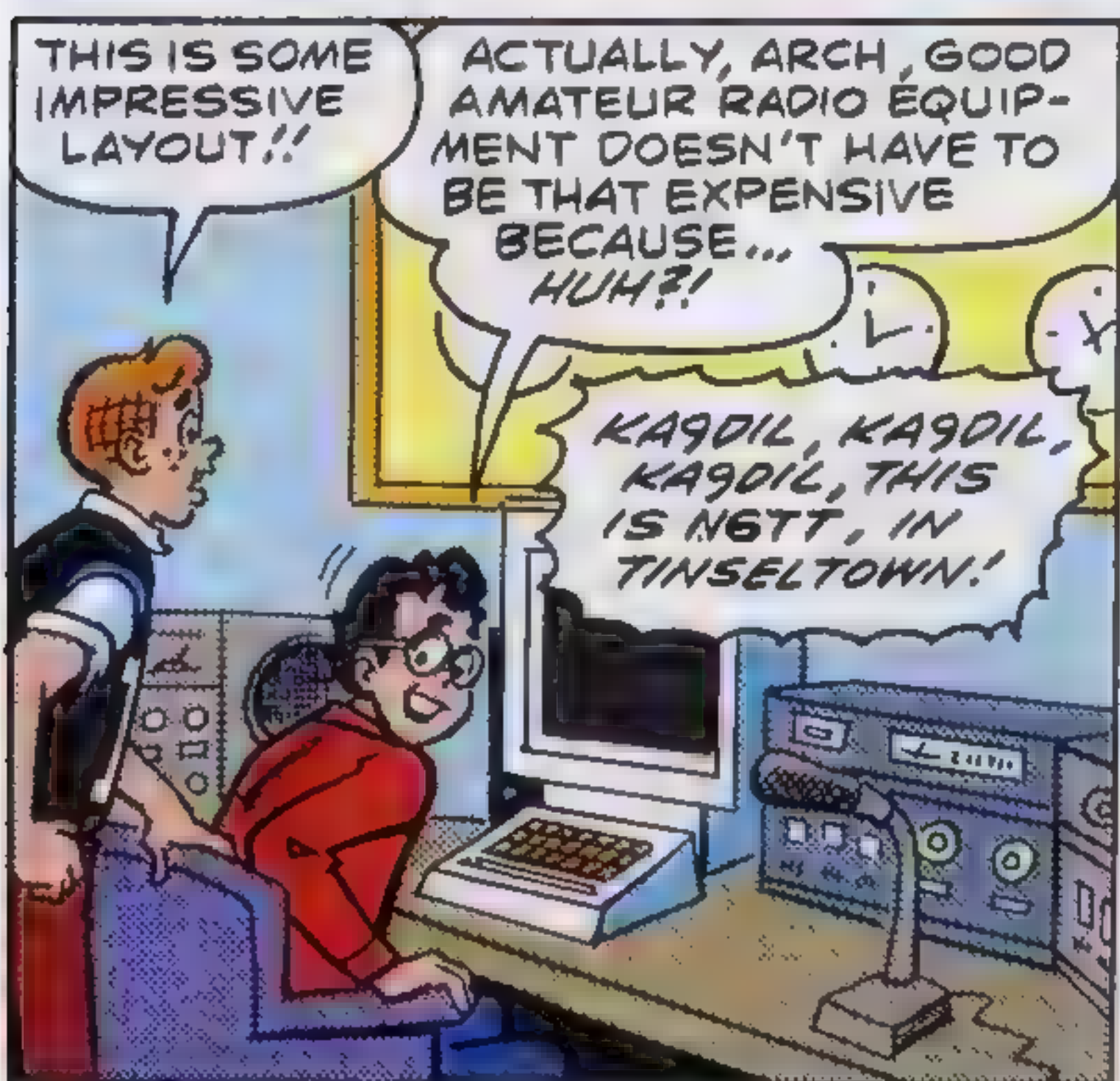
WHAT ARE YOU DOIN', DILT ?!

TURNING THAT BIG ANTENNA OUTSIDE BY REMOTE CONTROL TOWARD TINSEL-TOWN!!

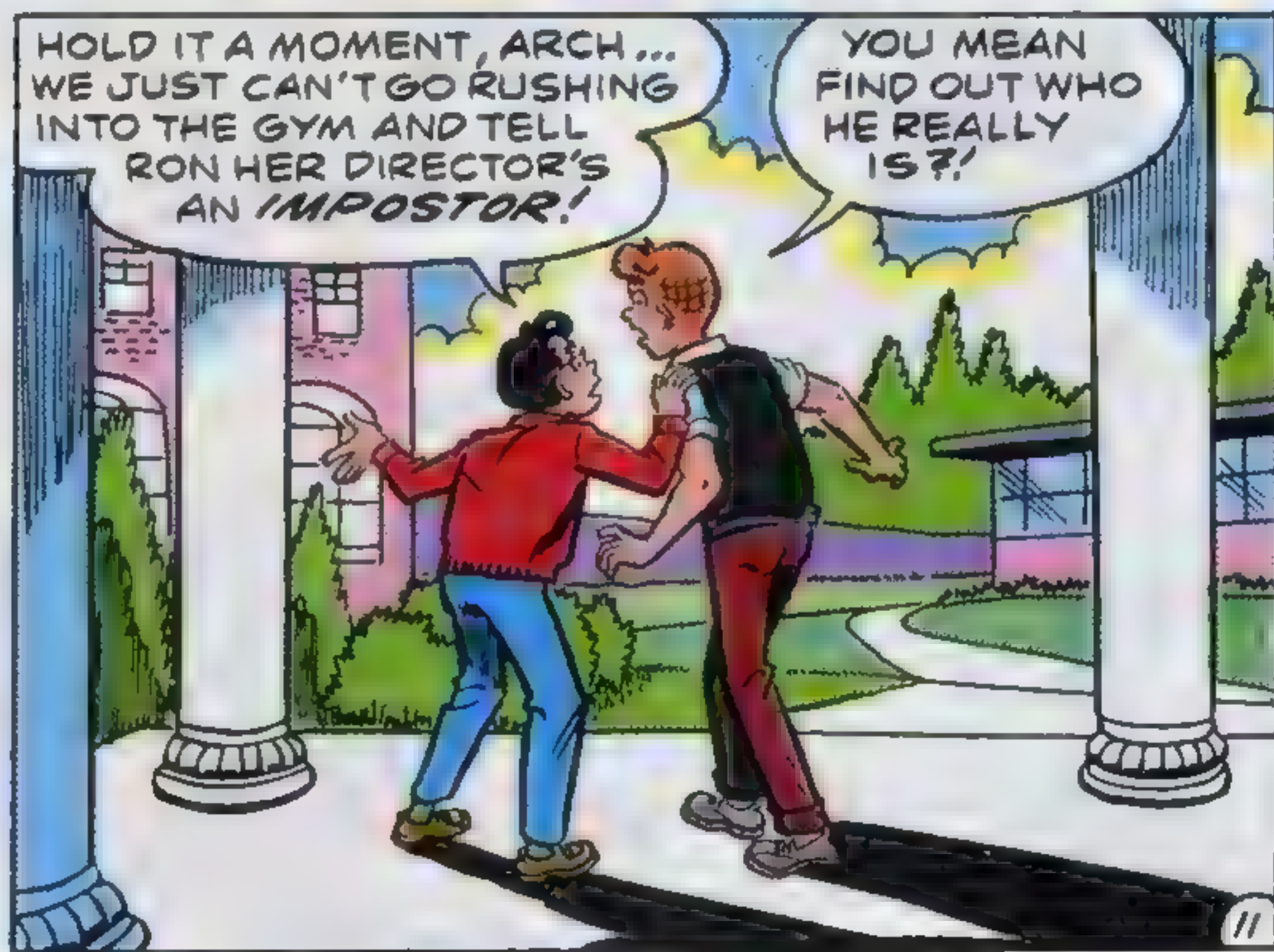
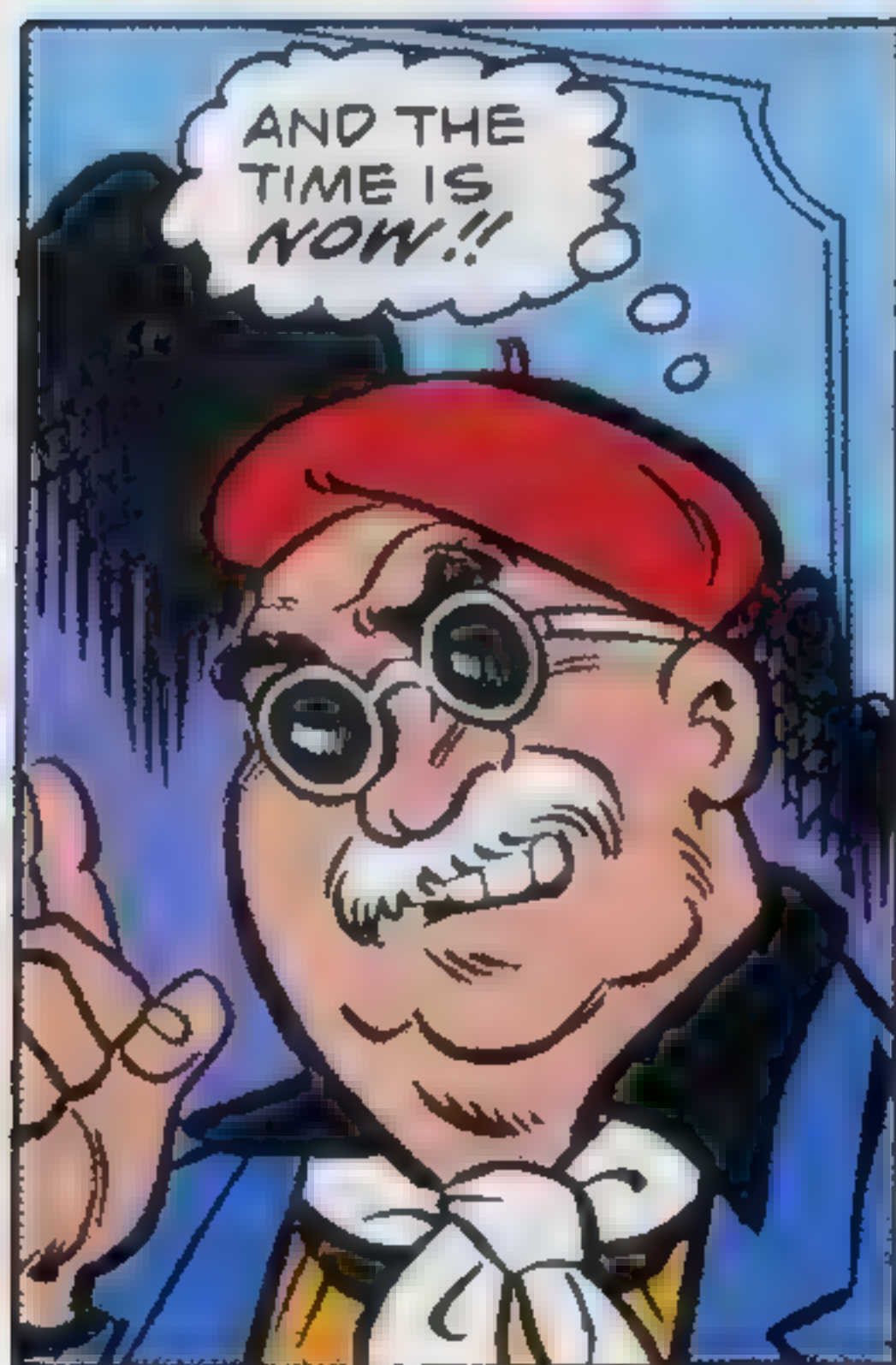
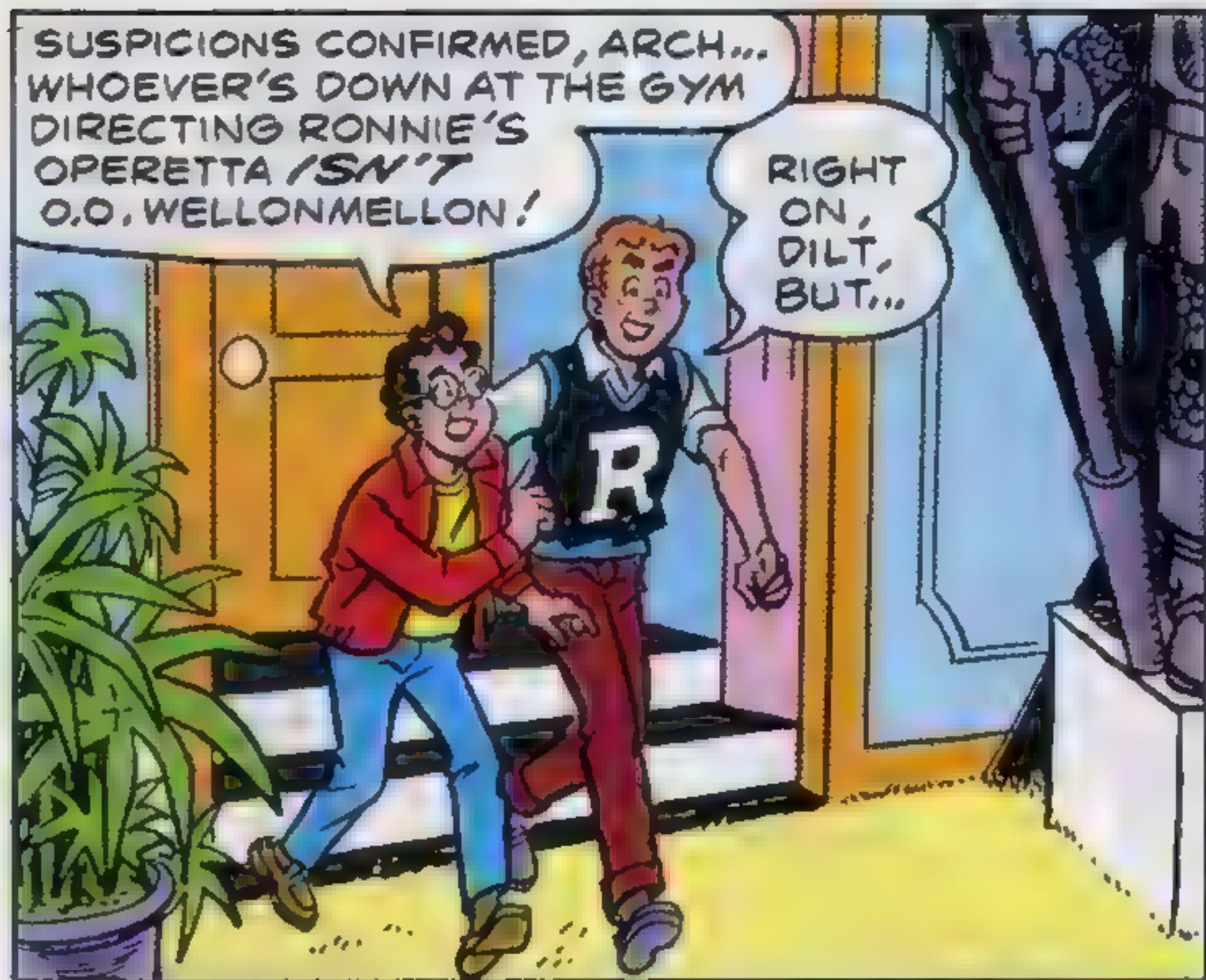
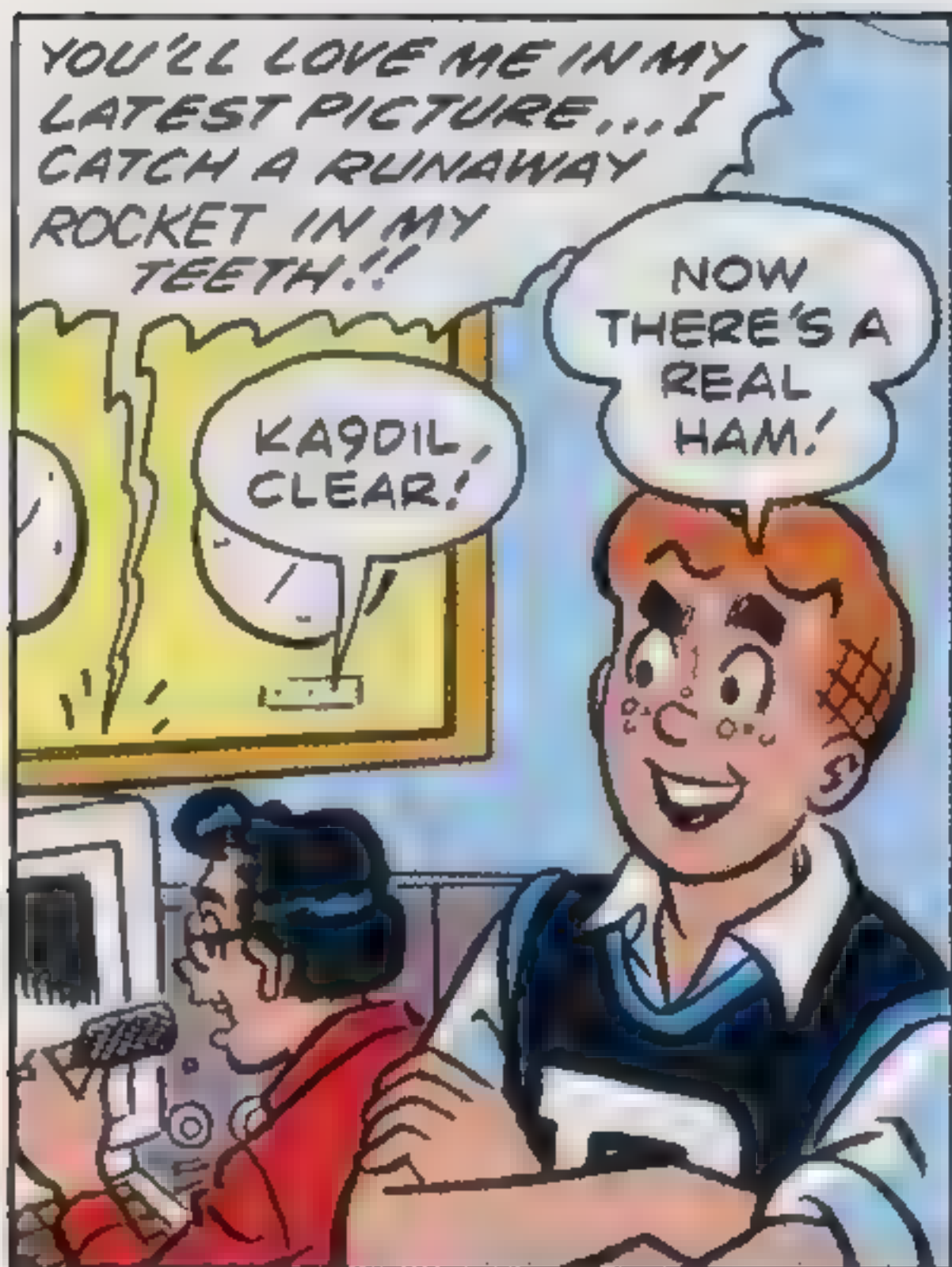


W6BLT, W6BLT, W6BLT IN TINSELTOWN... HERE IS KA9DIL, KA9DIL, KA9DIL! DO YOU COPY ?!

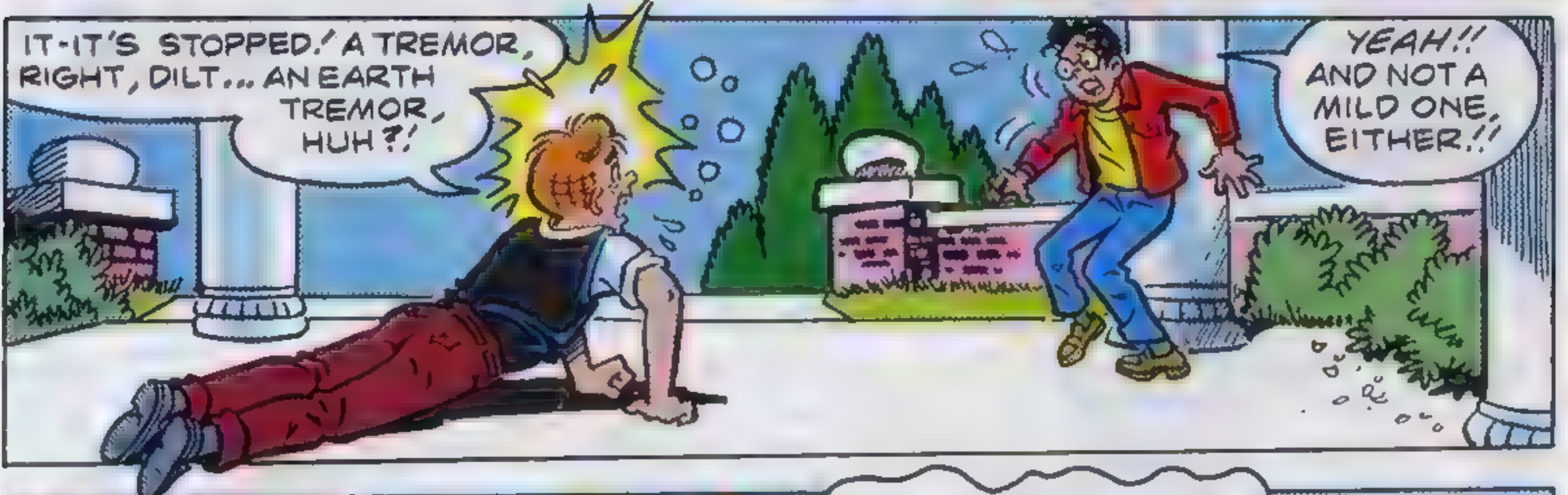
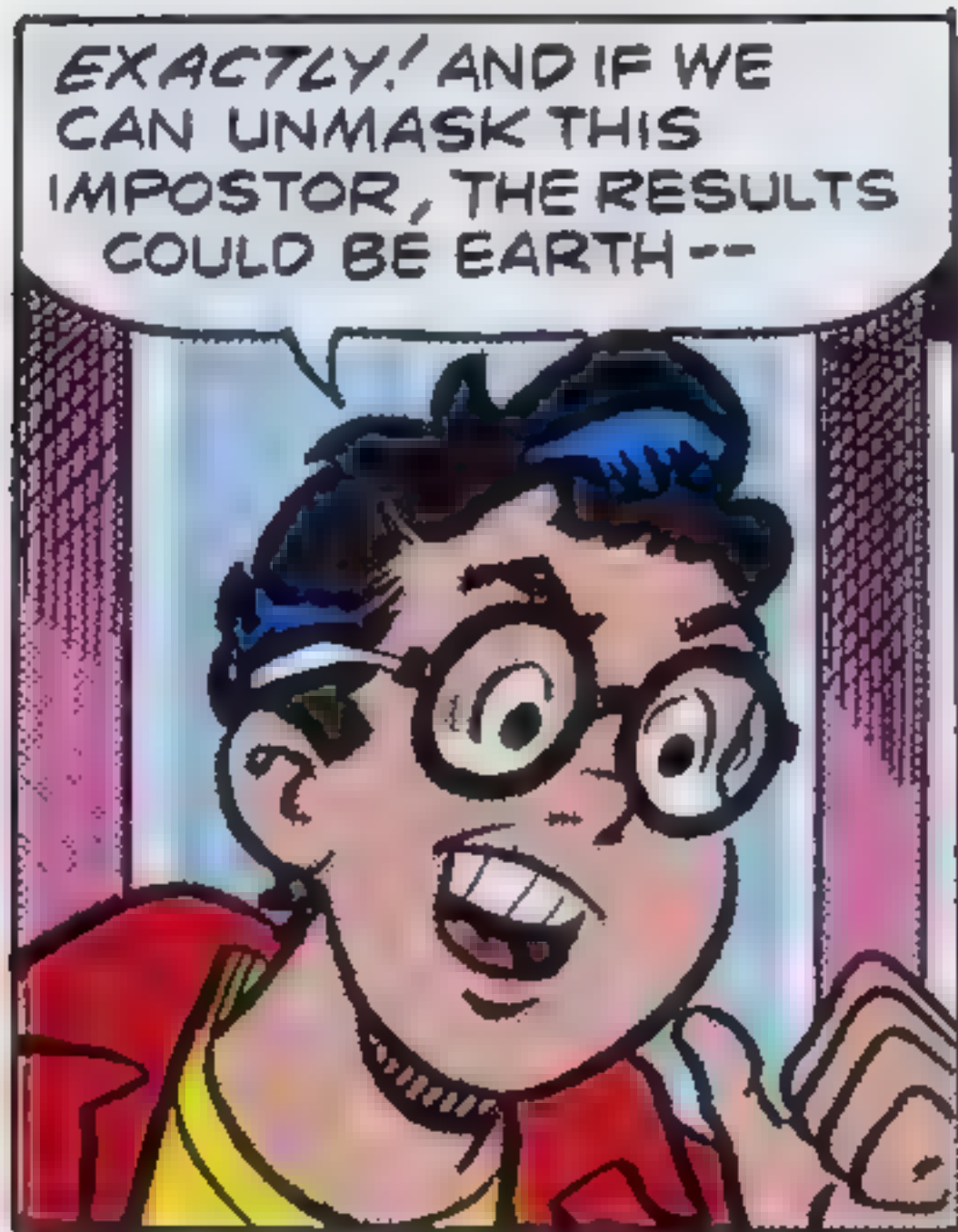




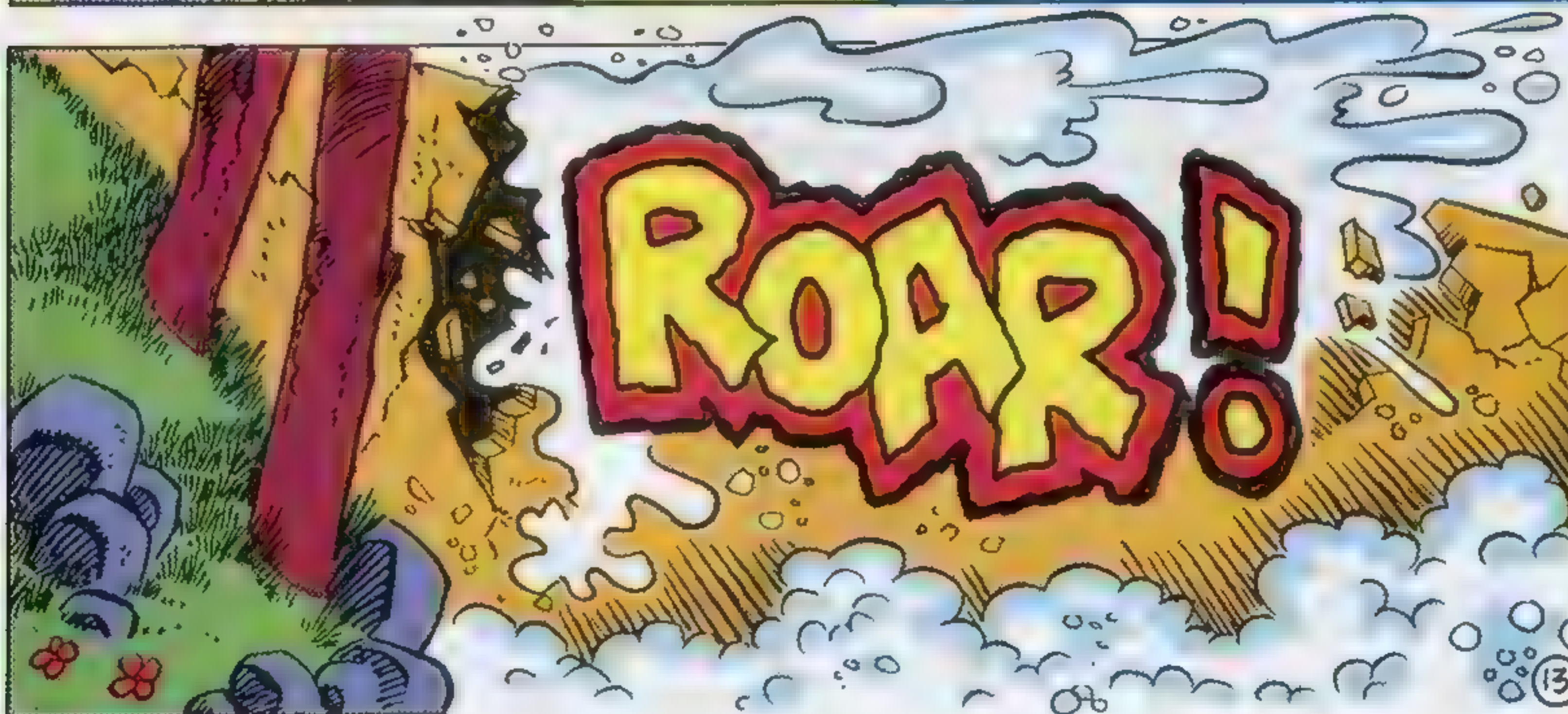
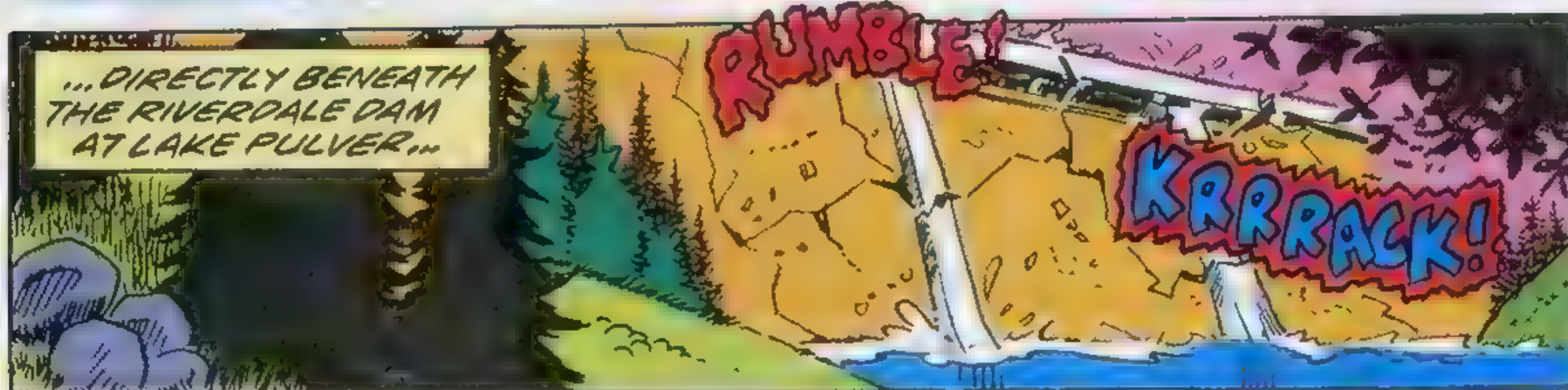
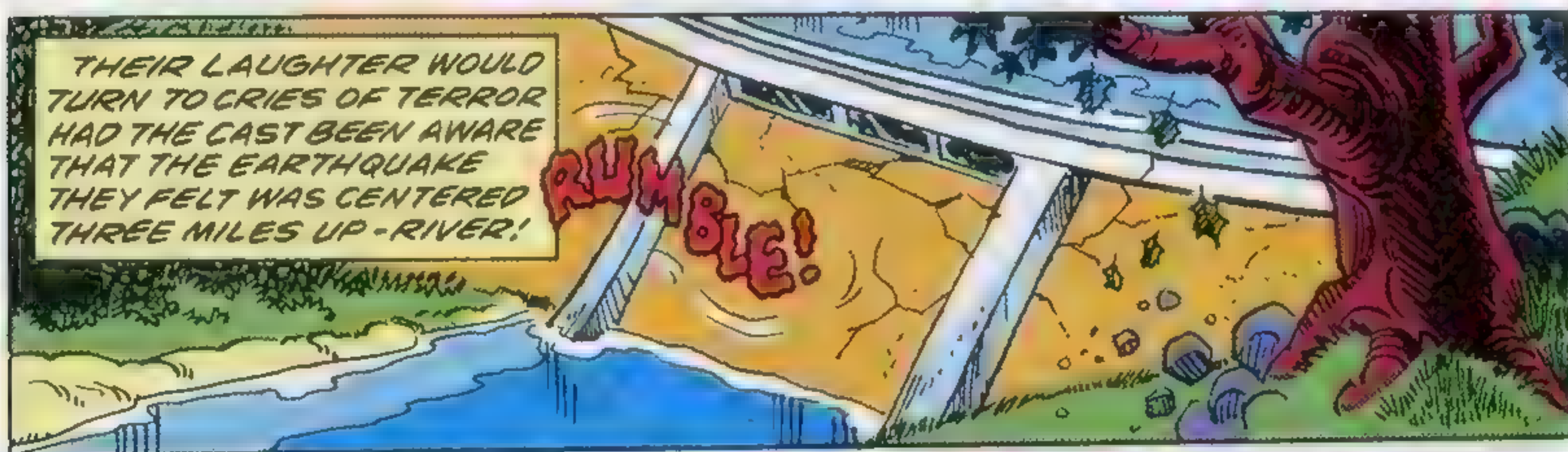
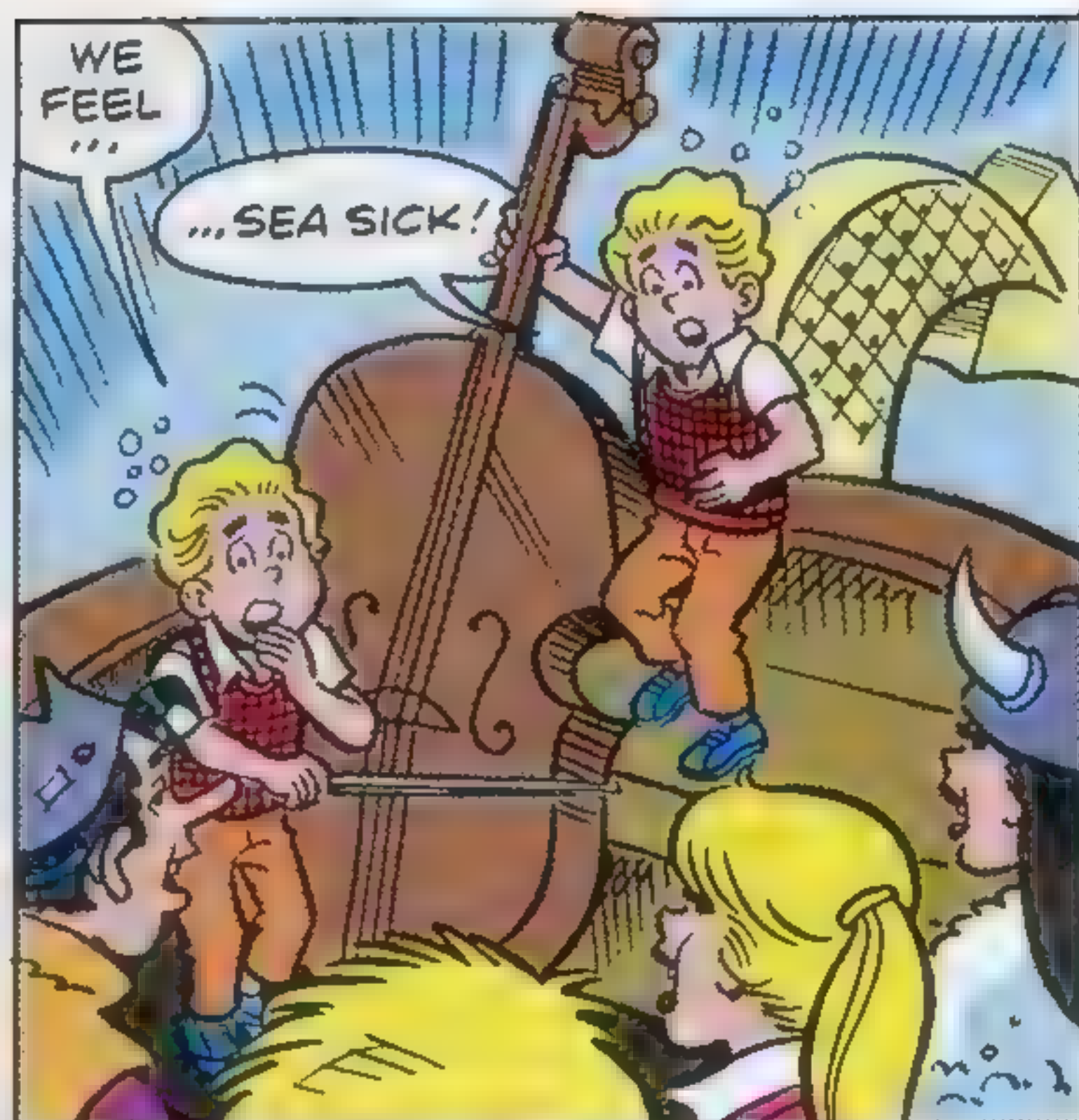




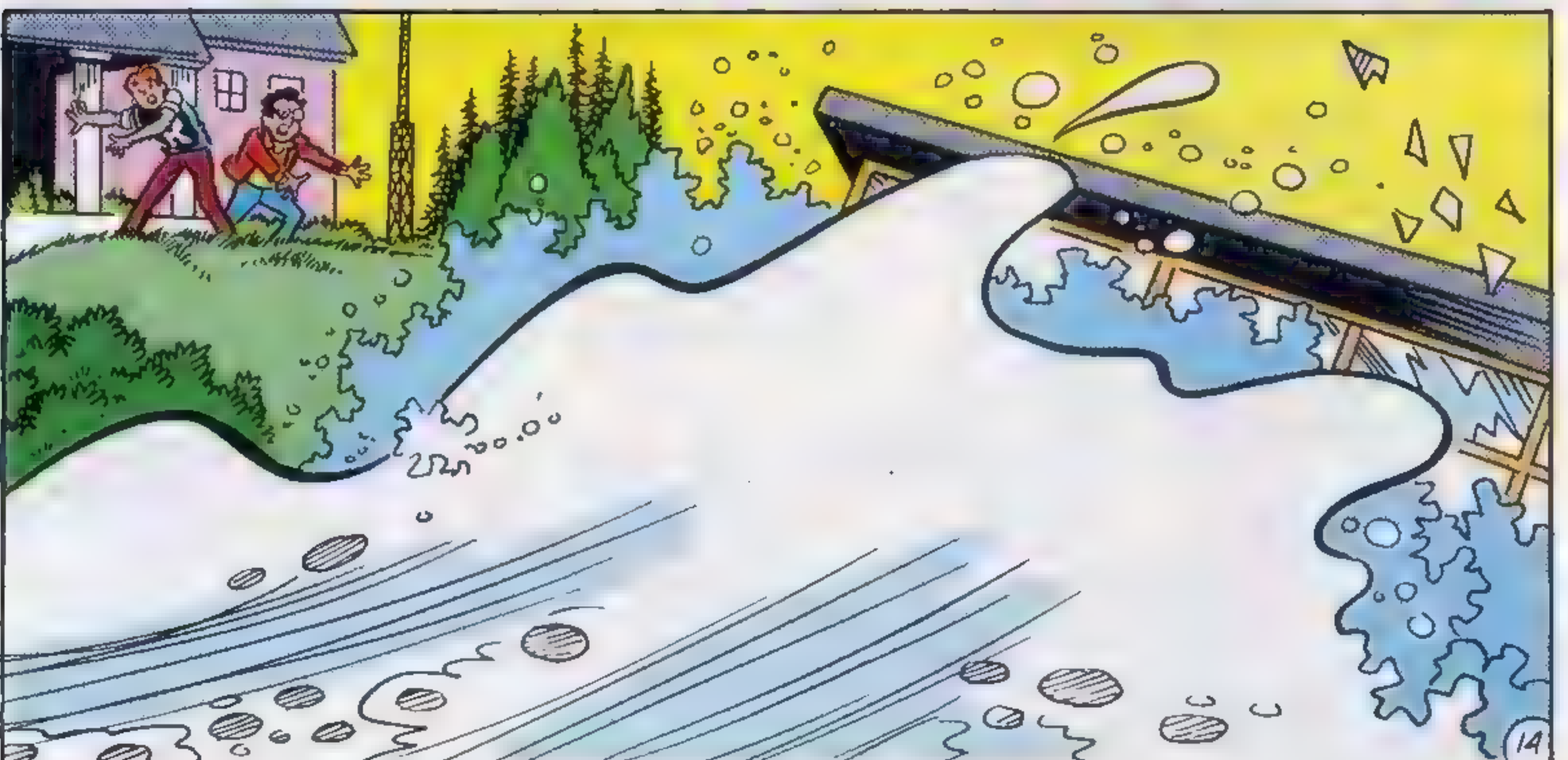
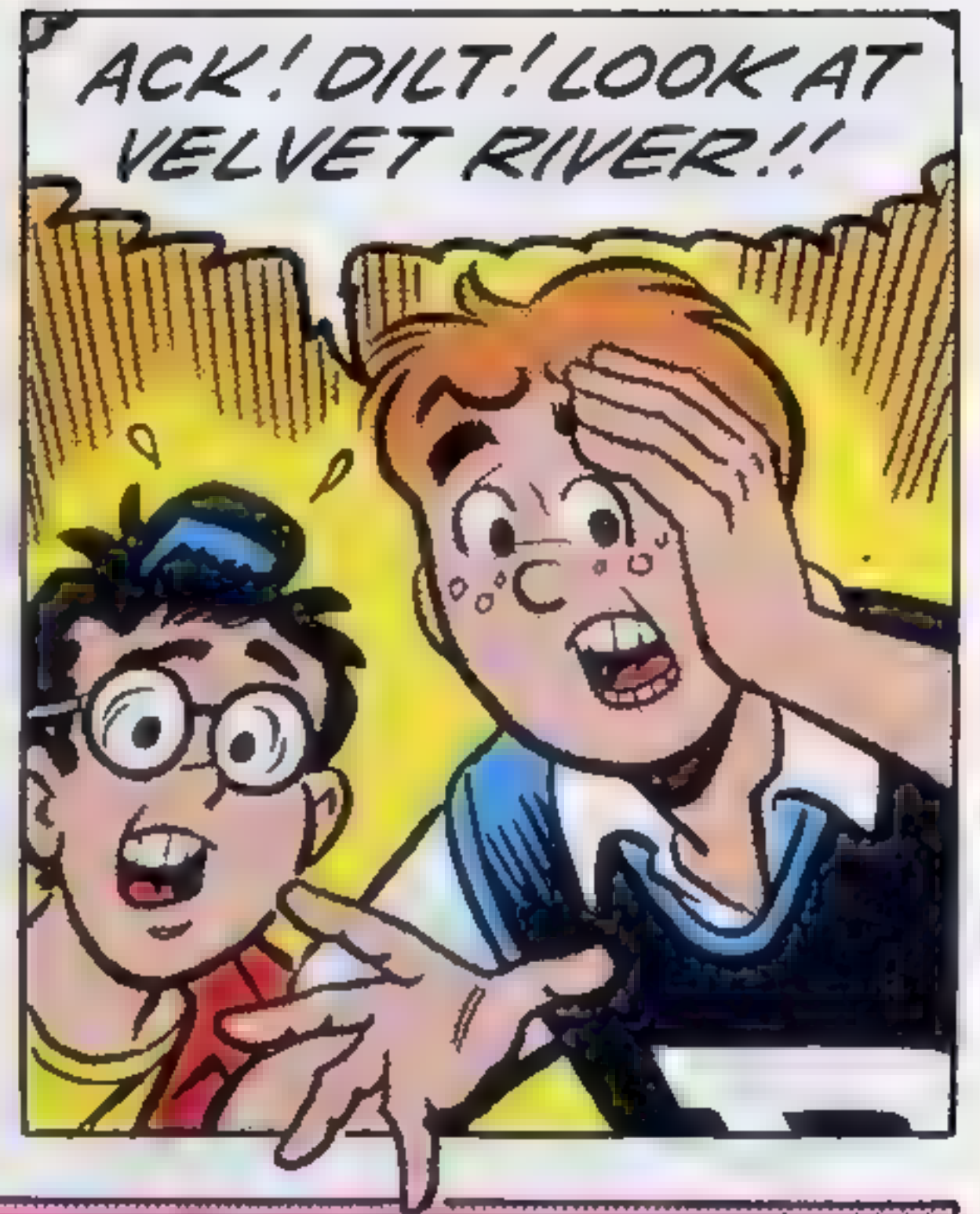
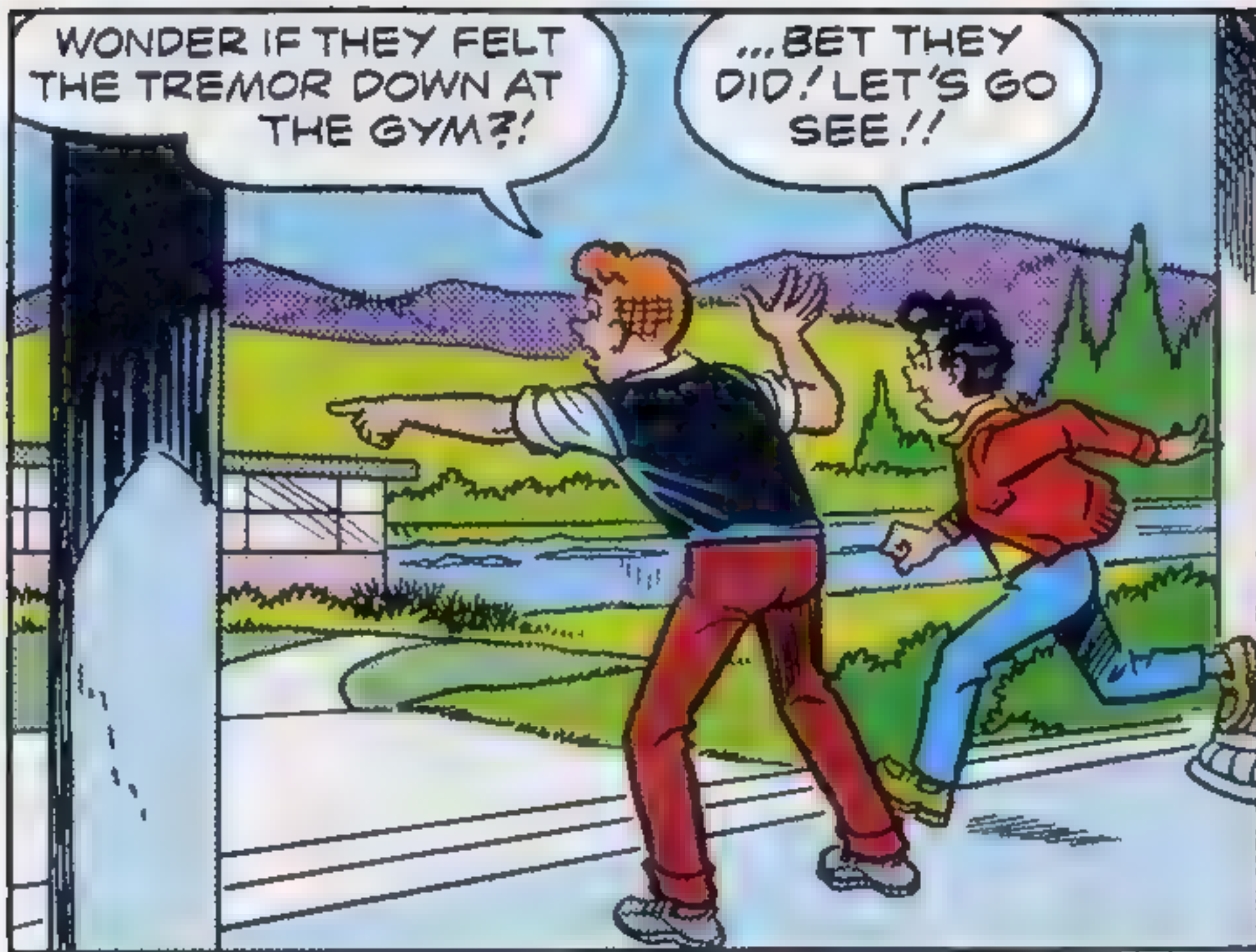




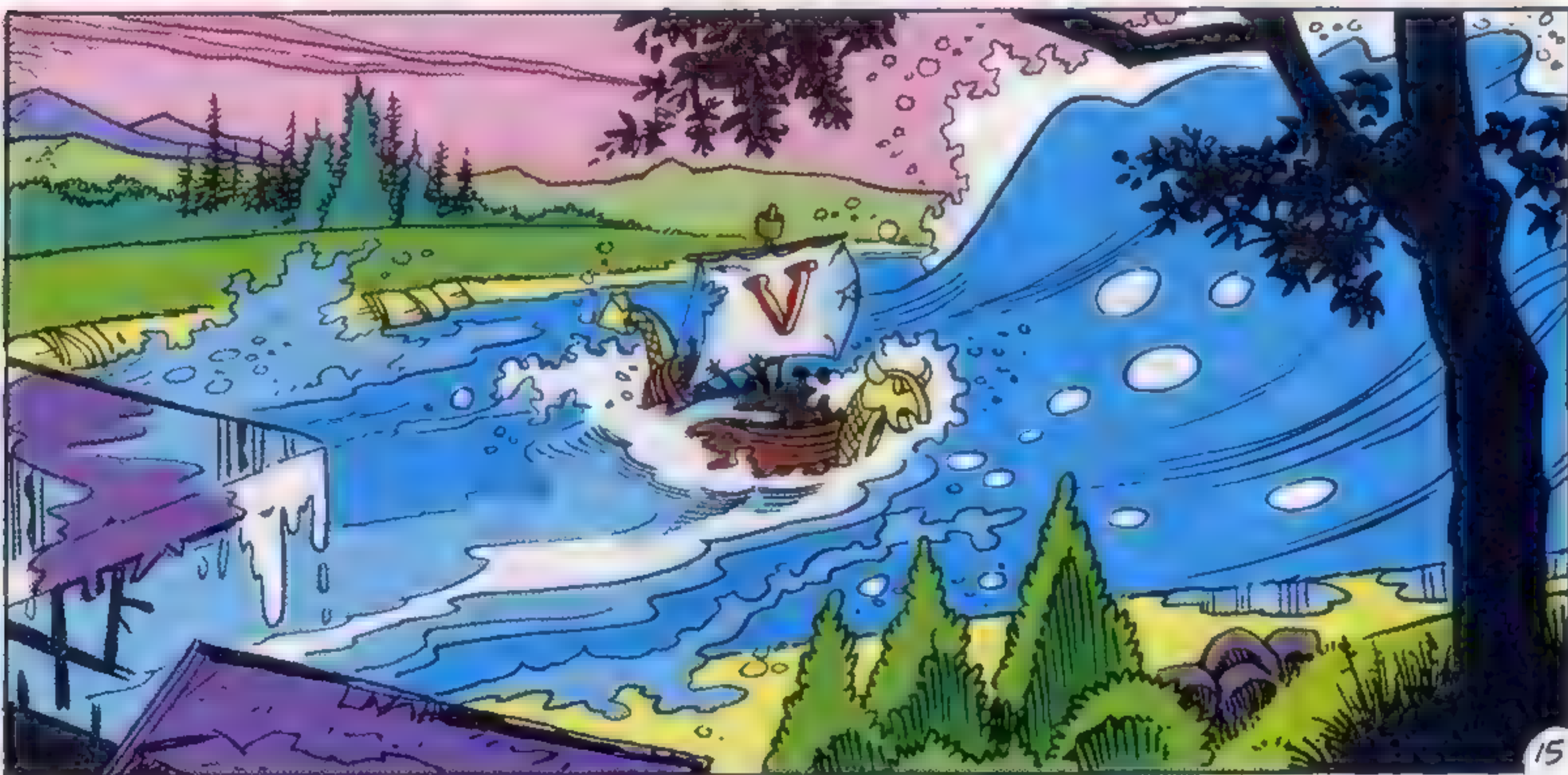




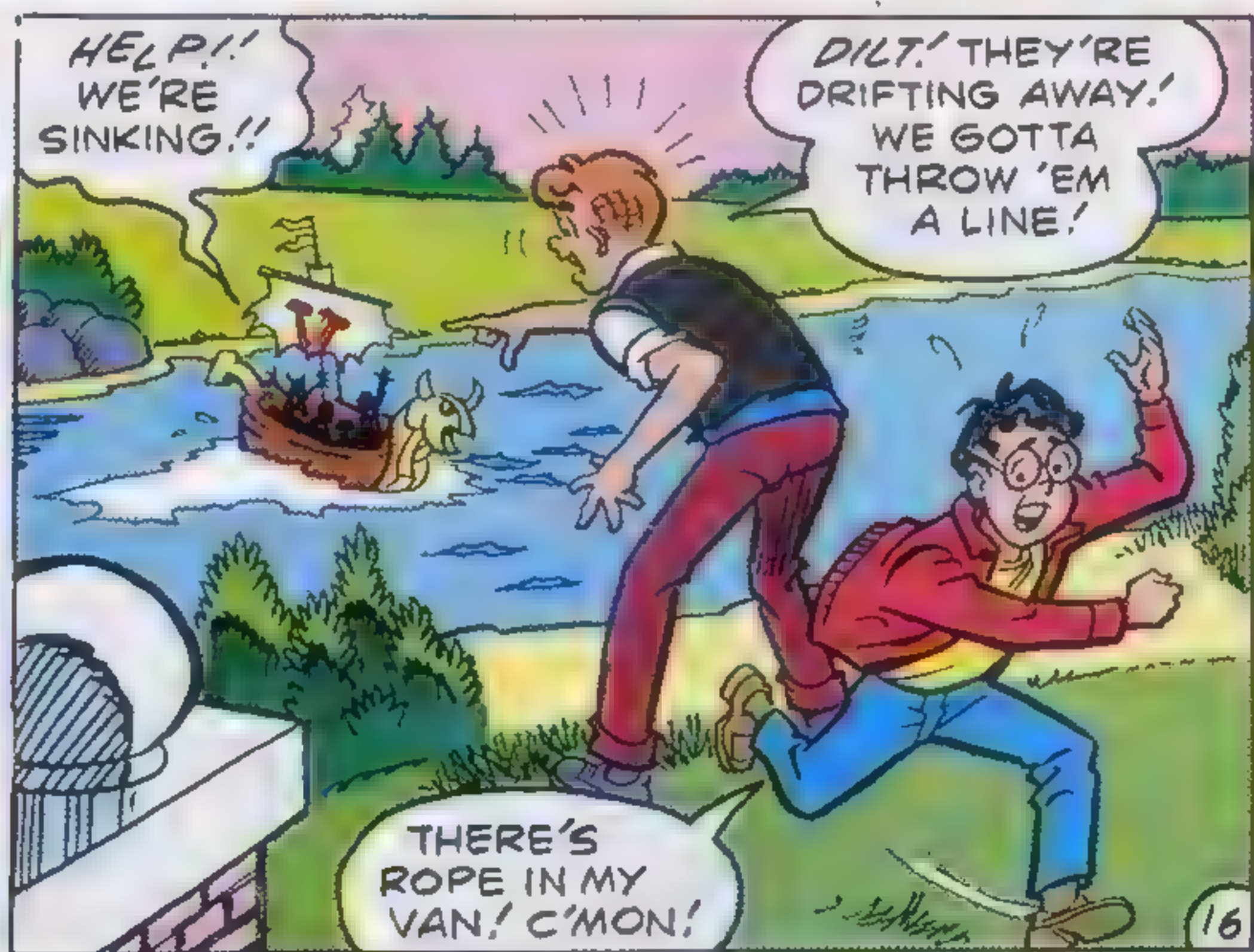
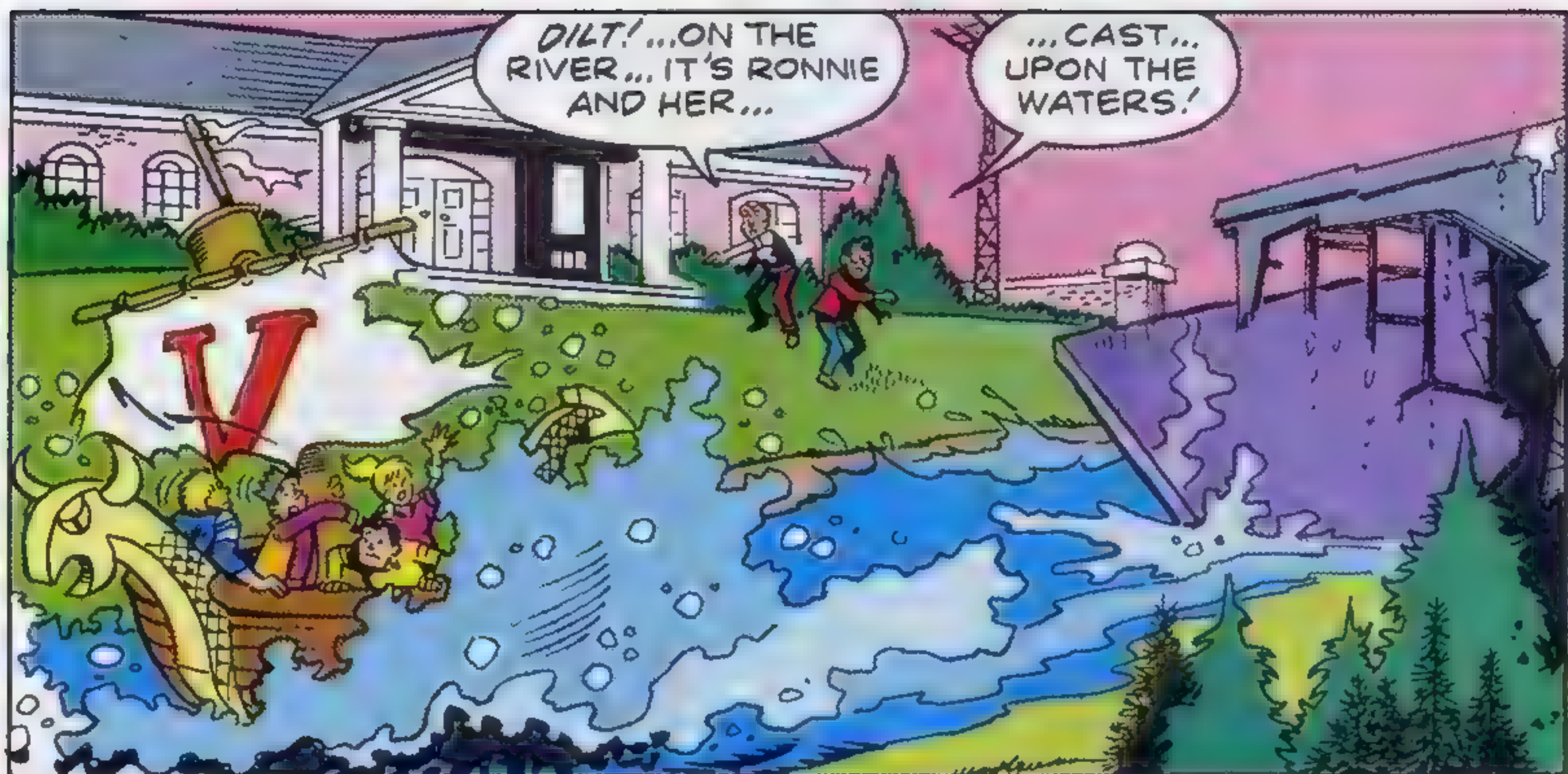




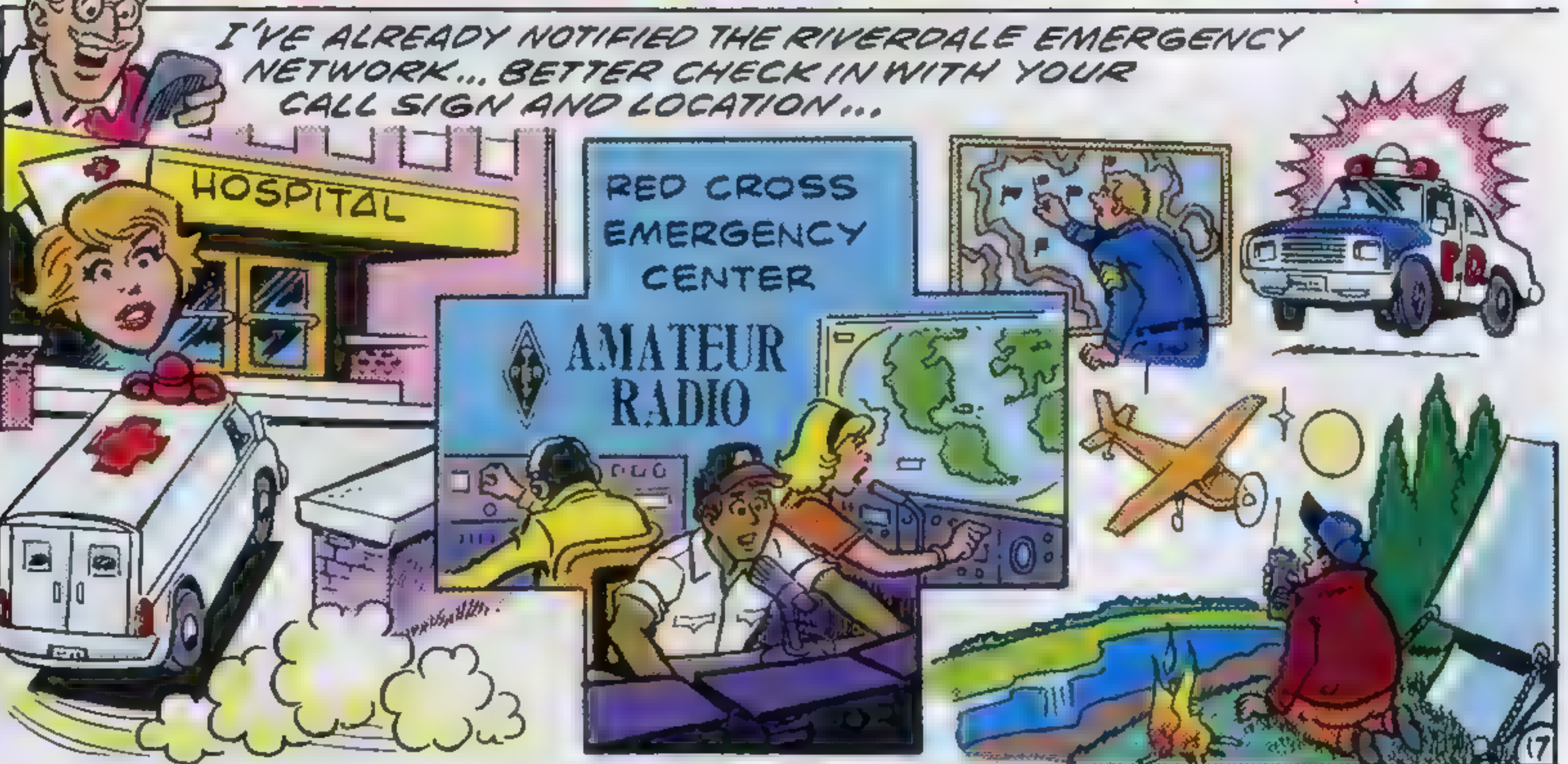
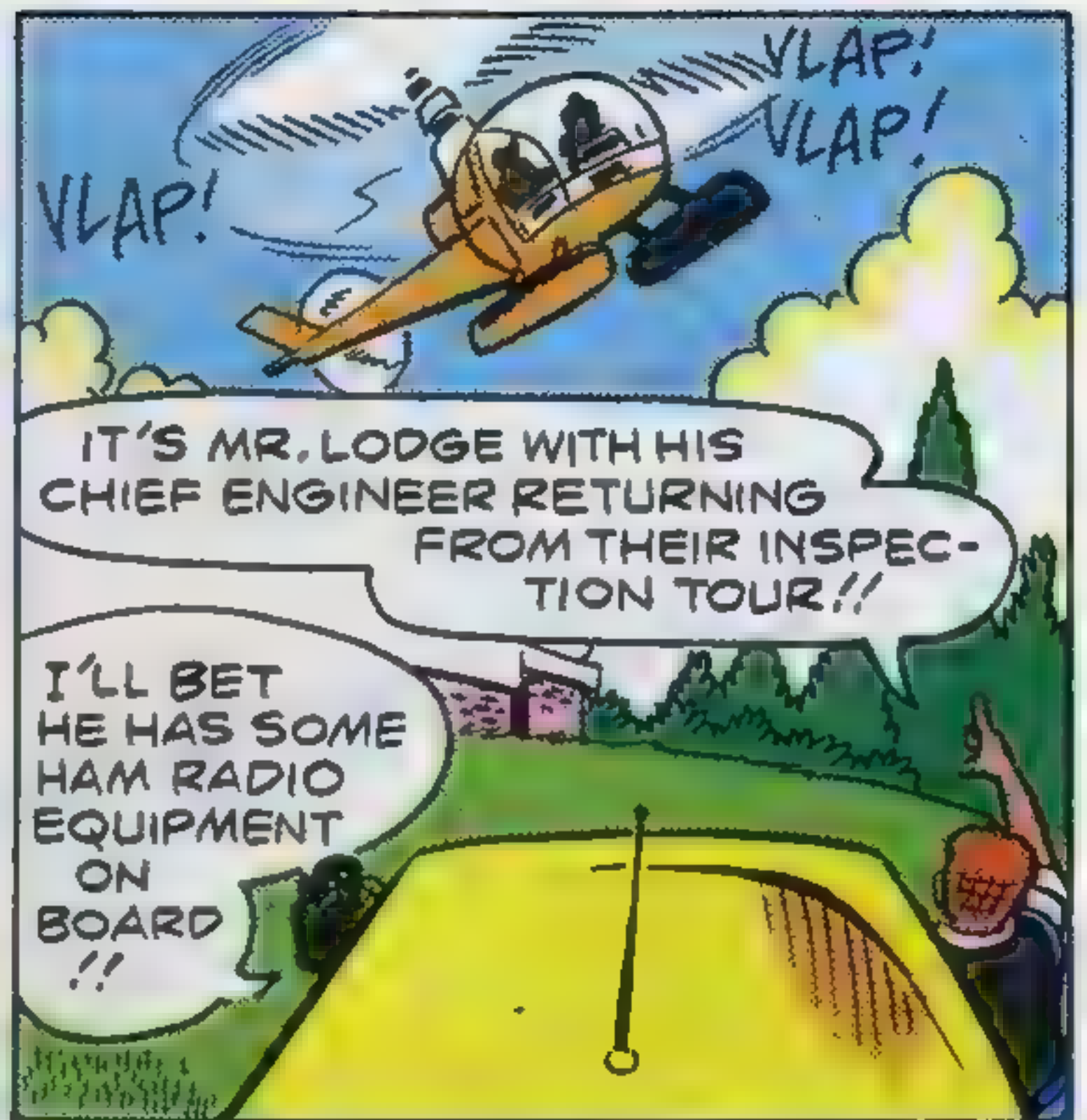




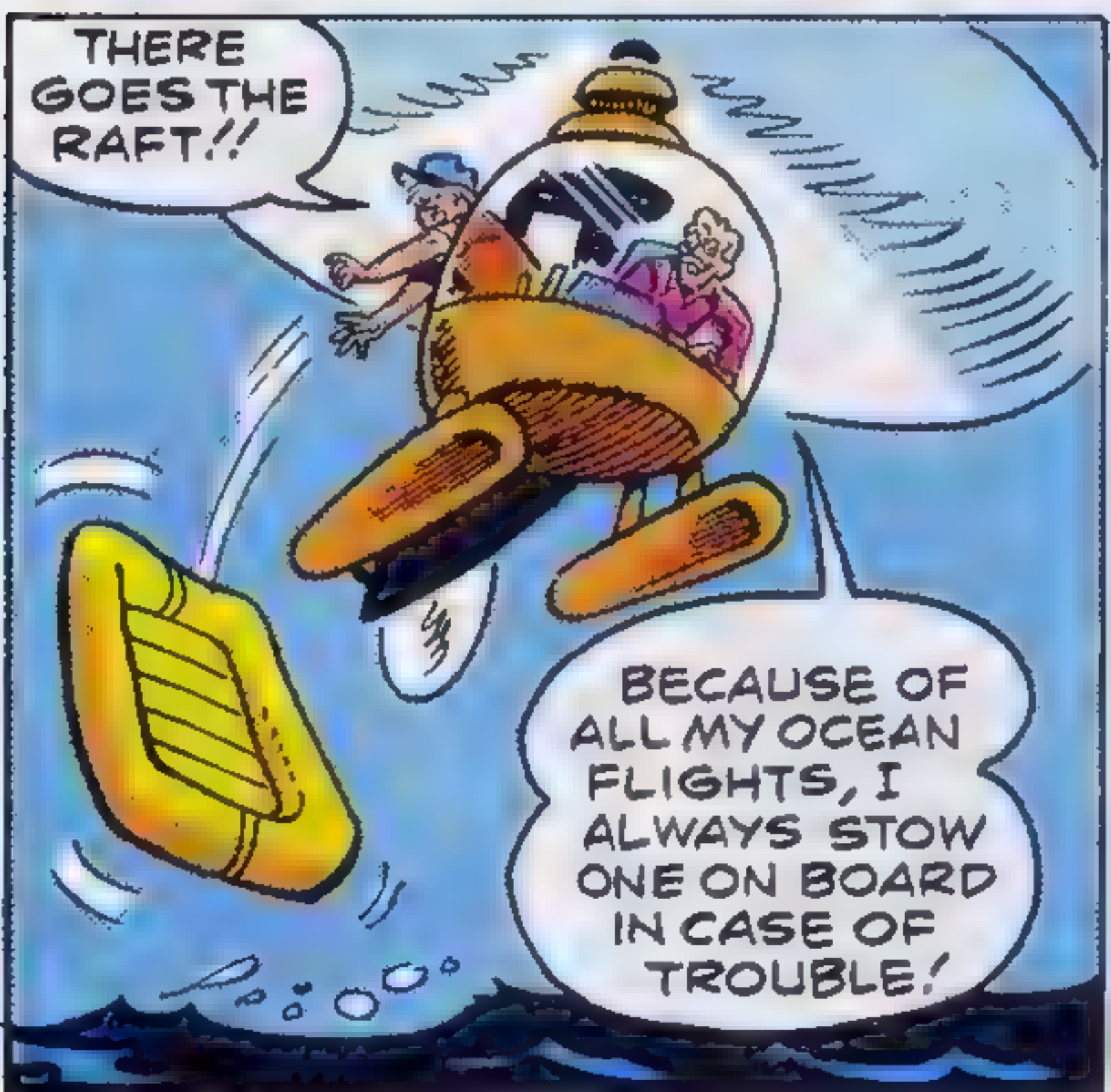
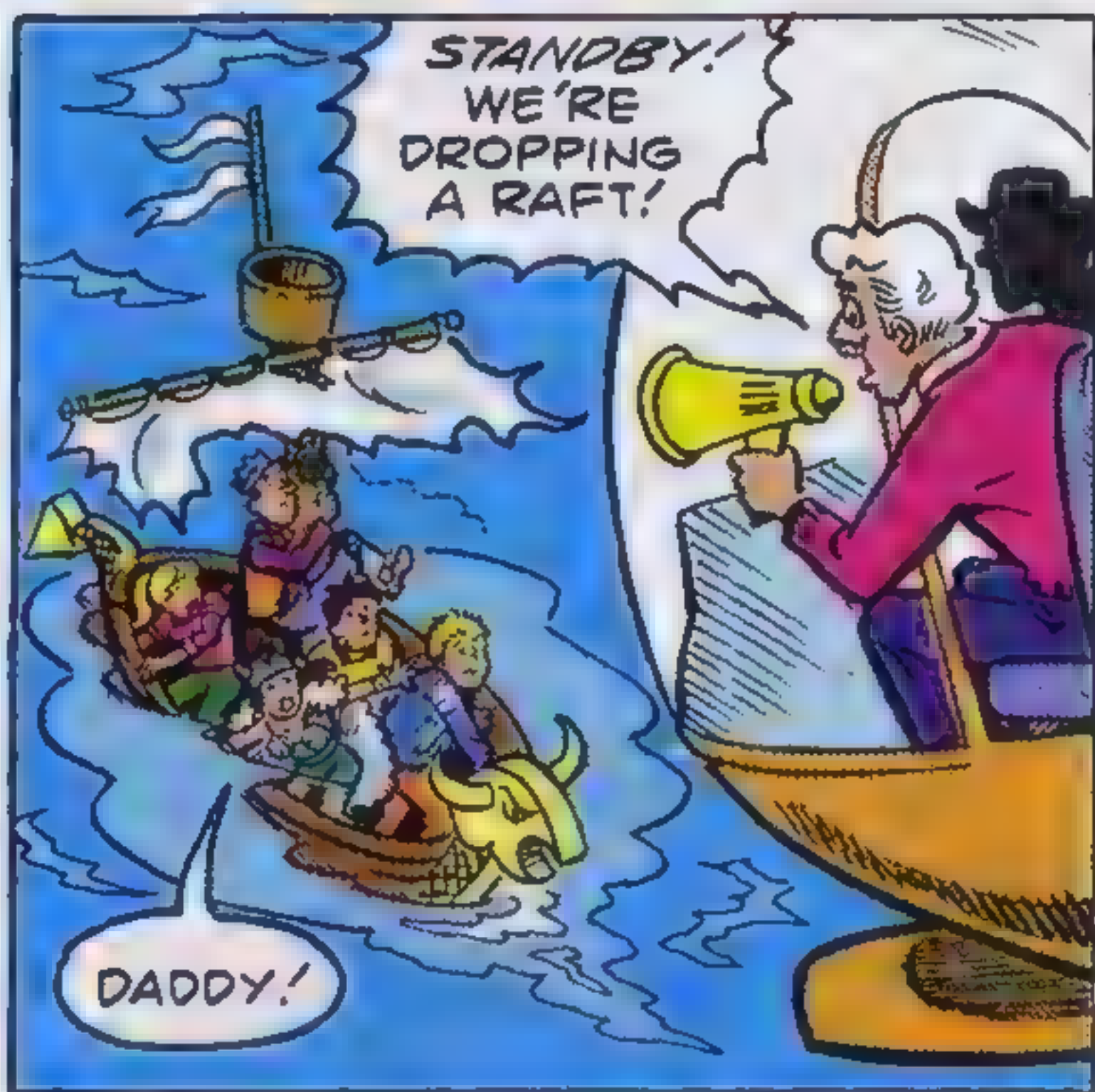
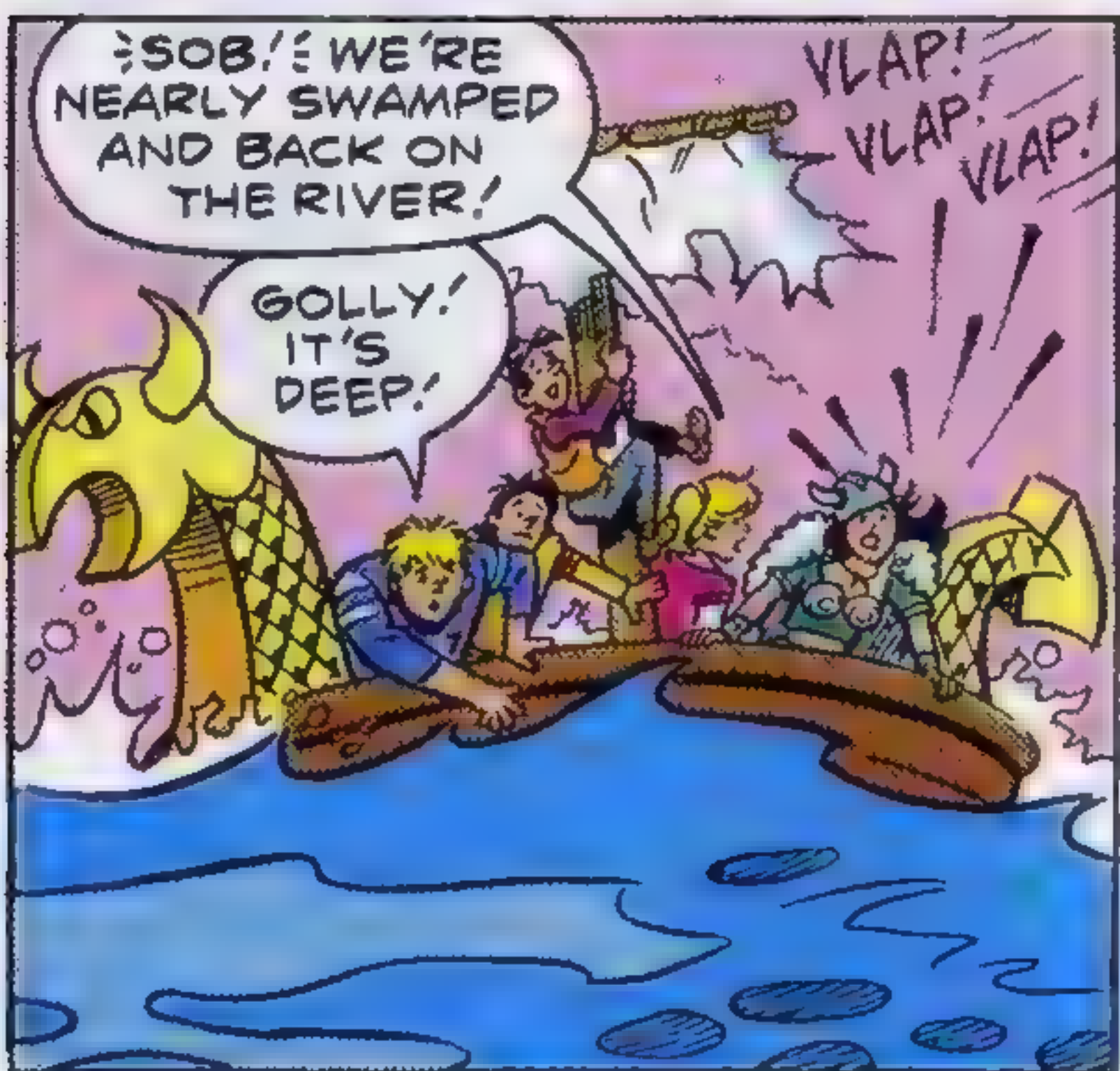
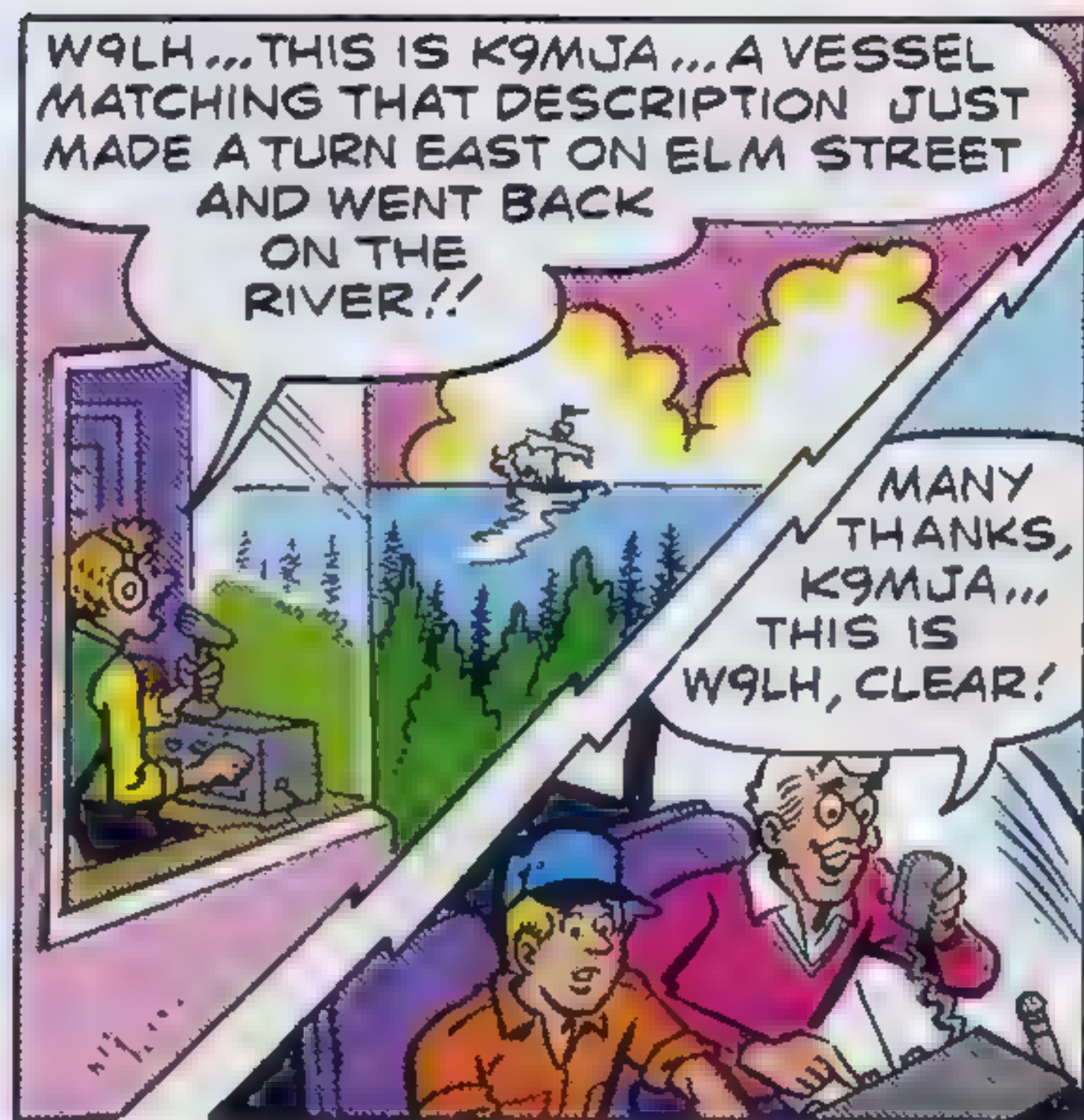




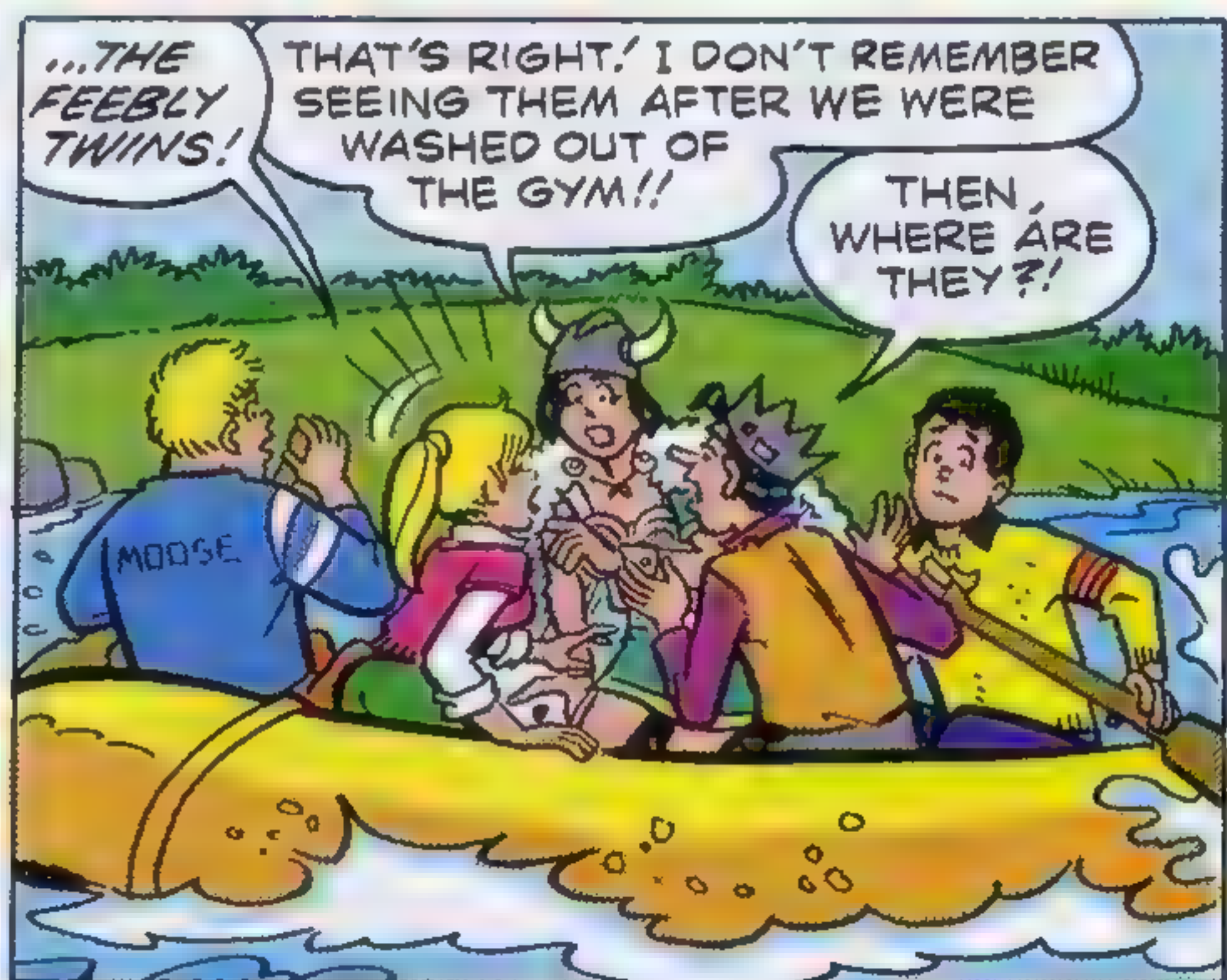
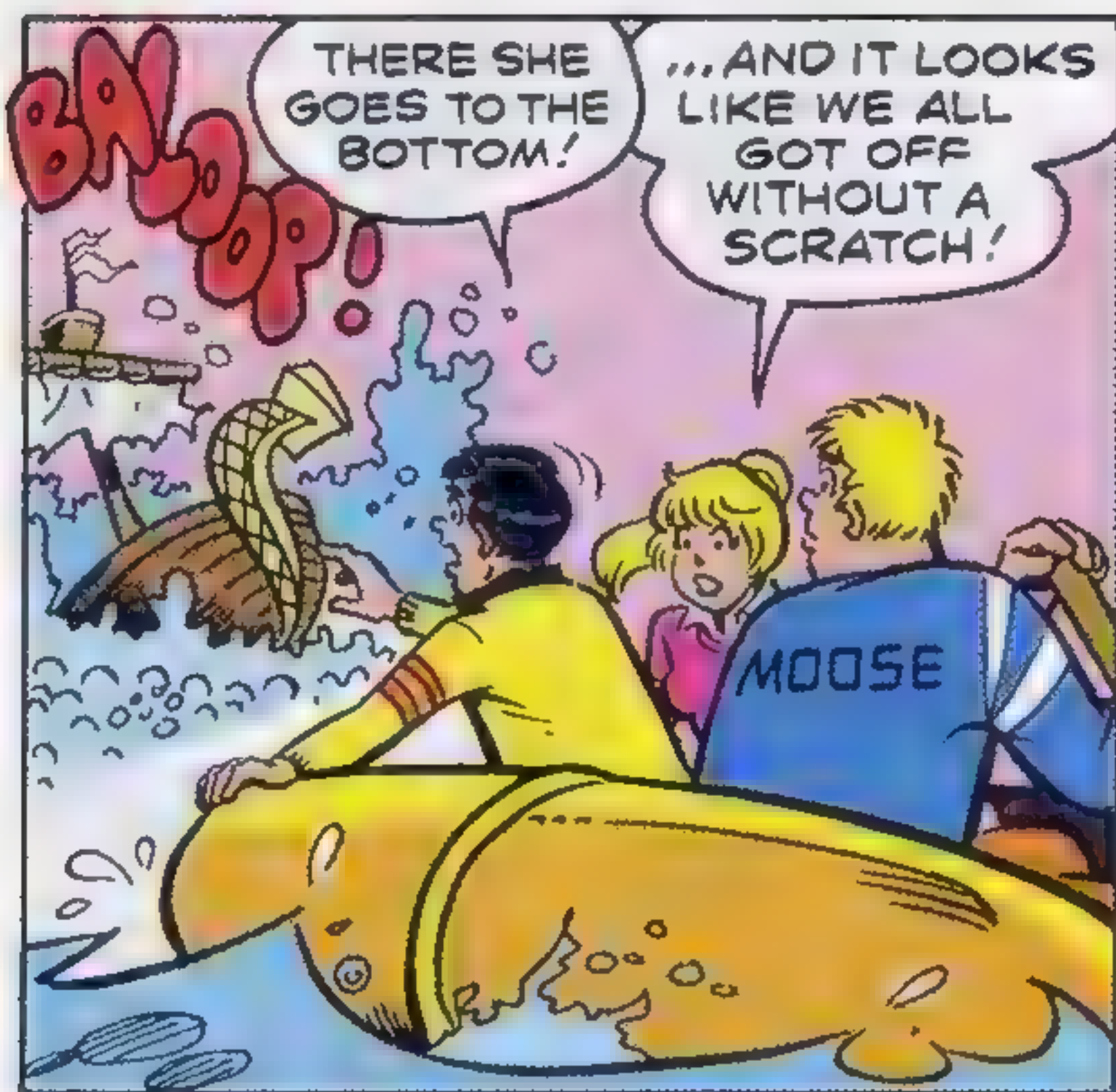






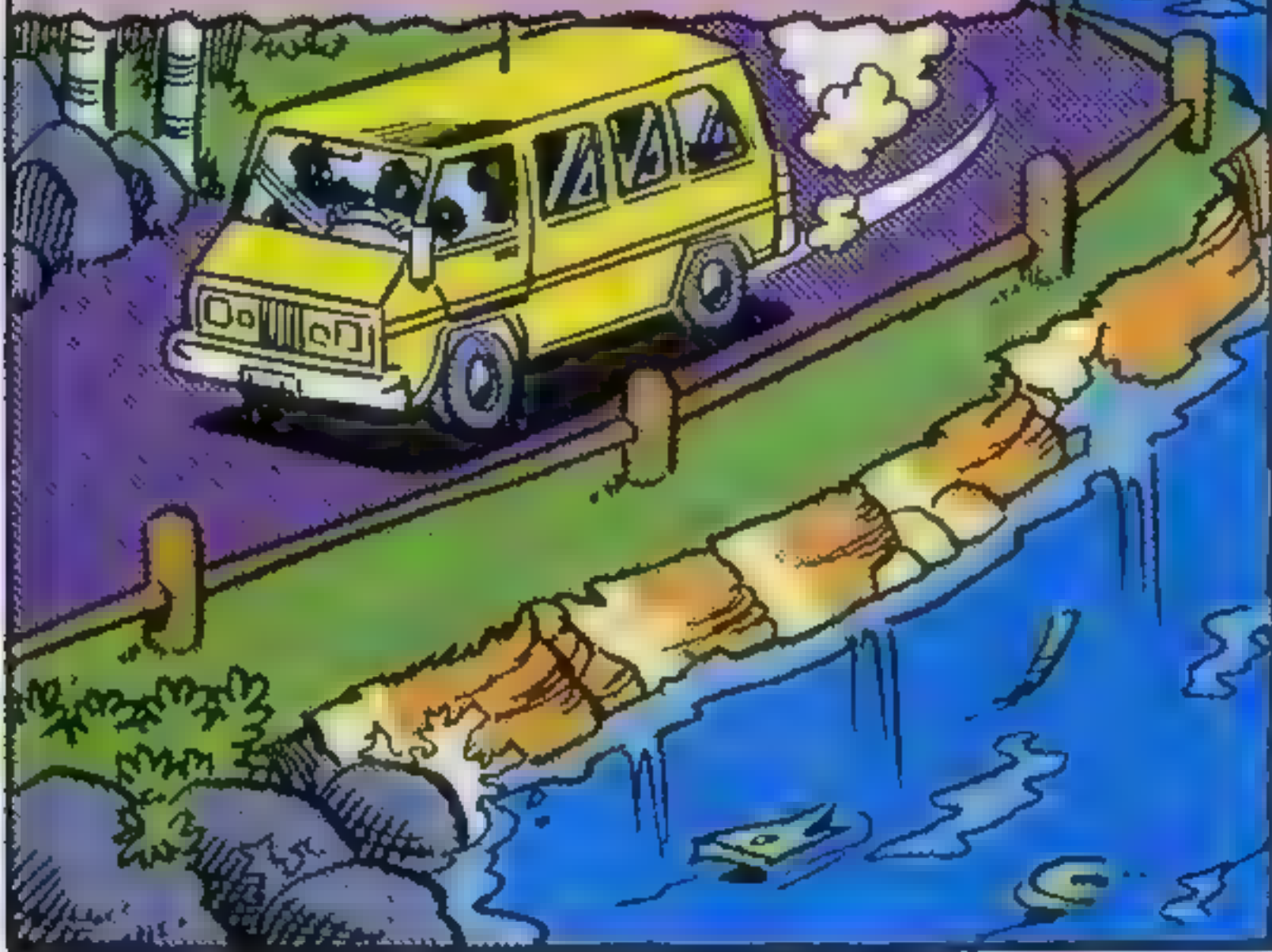






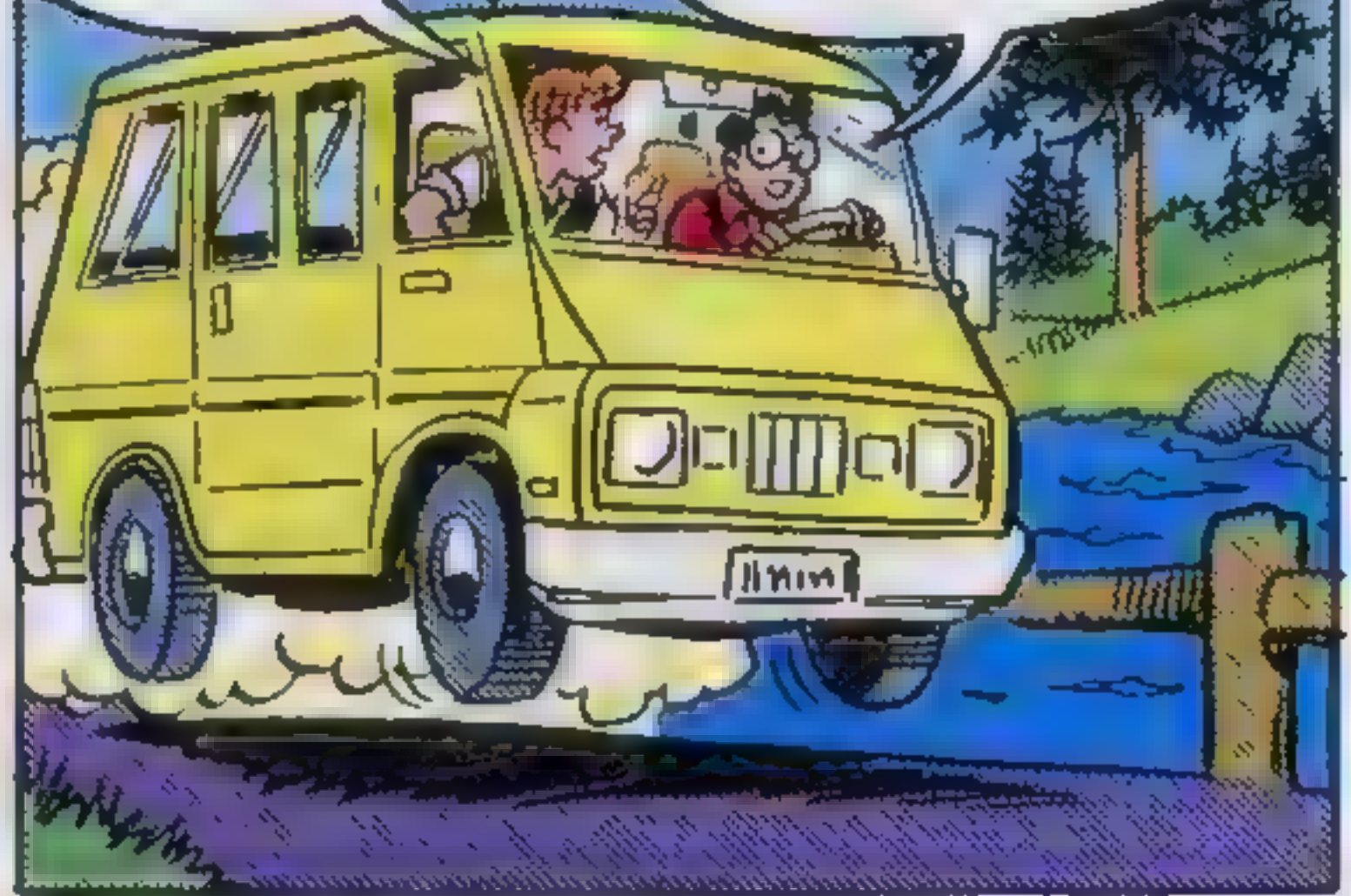


HEADING SOUTH ON THE HIGH RIVER ROAD, DILTON AND ARCHIE NEAR MR. LODGE, GIVE A REPORT ON THE MISSING FEEBLYS TO THE EMERGENCY NETWORK...



KEEP DRIVIN' SOUTH, DILT, FOLLOW THE RIVER... FOR A WHILE! CHECK ALL THE FLOATING DEBRIS CAREFULLY!

YOU HAVE A HUNCH THE FEEBLYS ARE BEING SWEEPED ALONG OUT HERE?

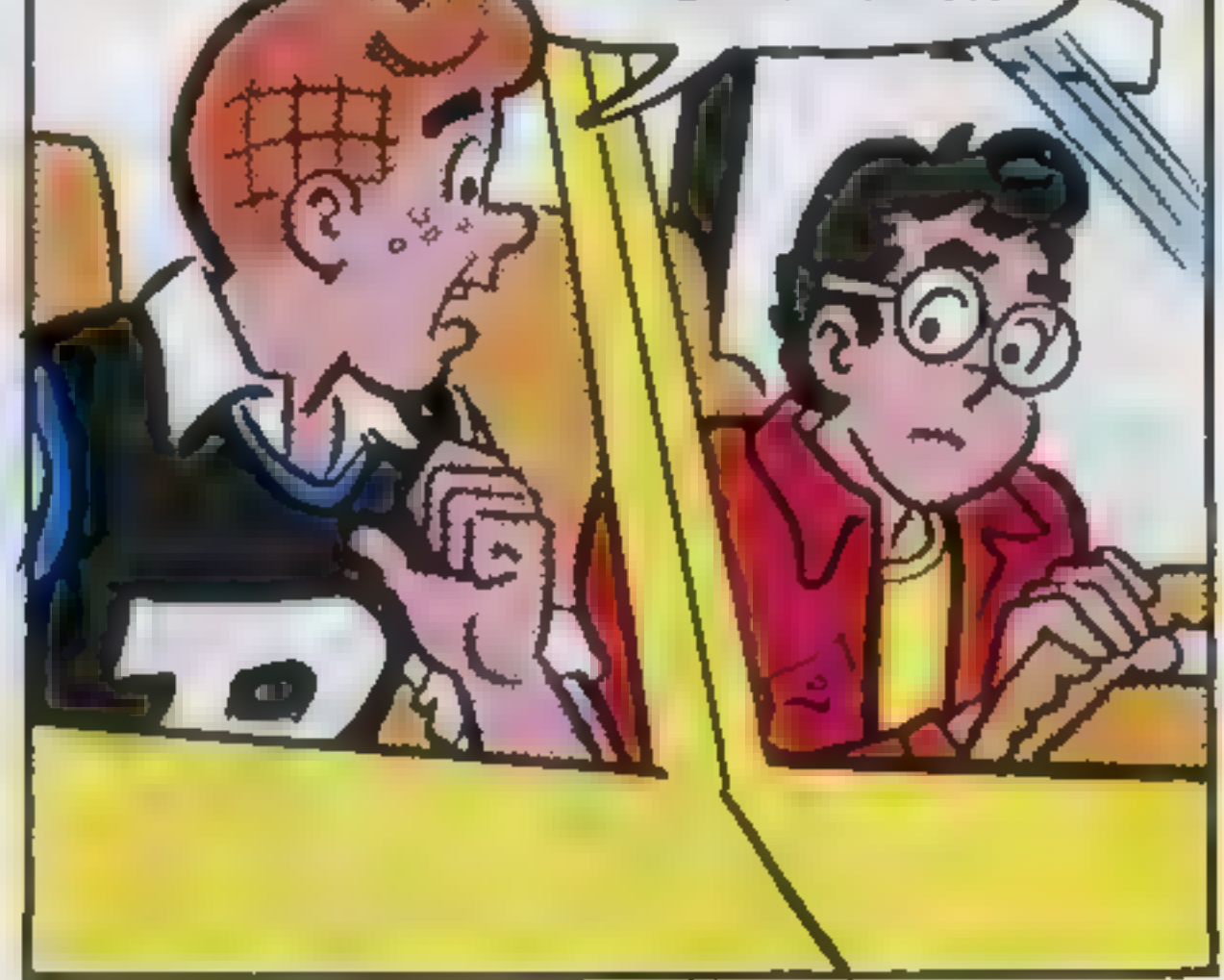


NO SIGHT OF 'EM ALONG HERE, DILT! I WANT YOU TO DRIVE TO LOGGERS' POND, PRONTO!!

LOGGERS' POND! BUT WE'LL LOSE SIGHT OF THE RIVER, AND...

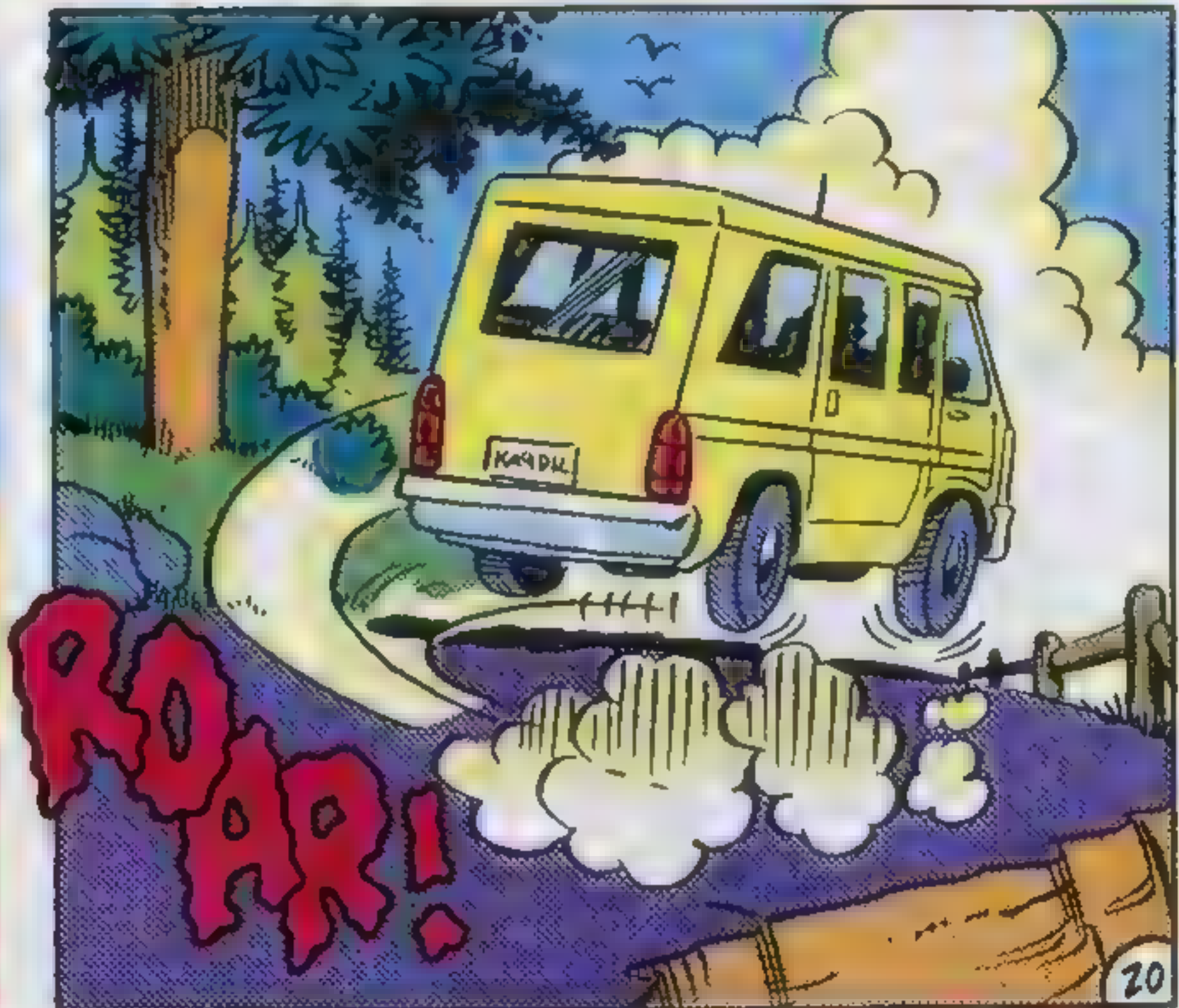
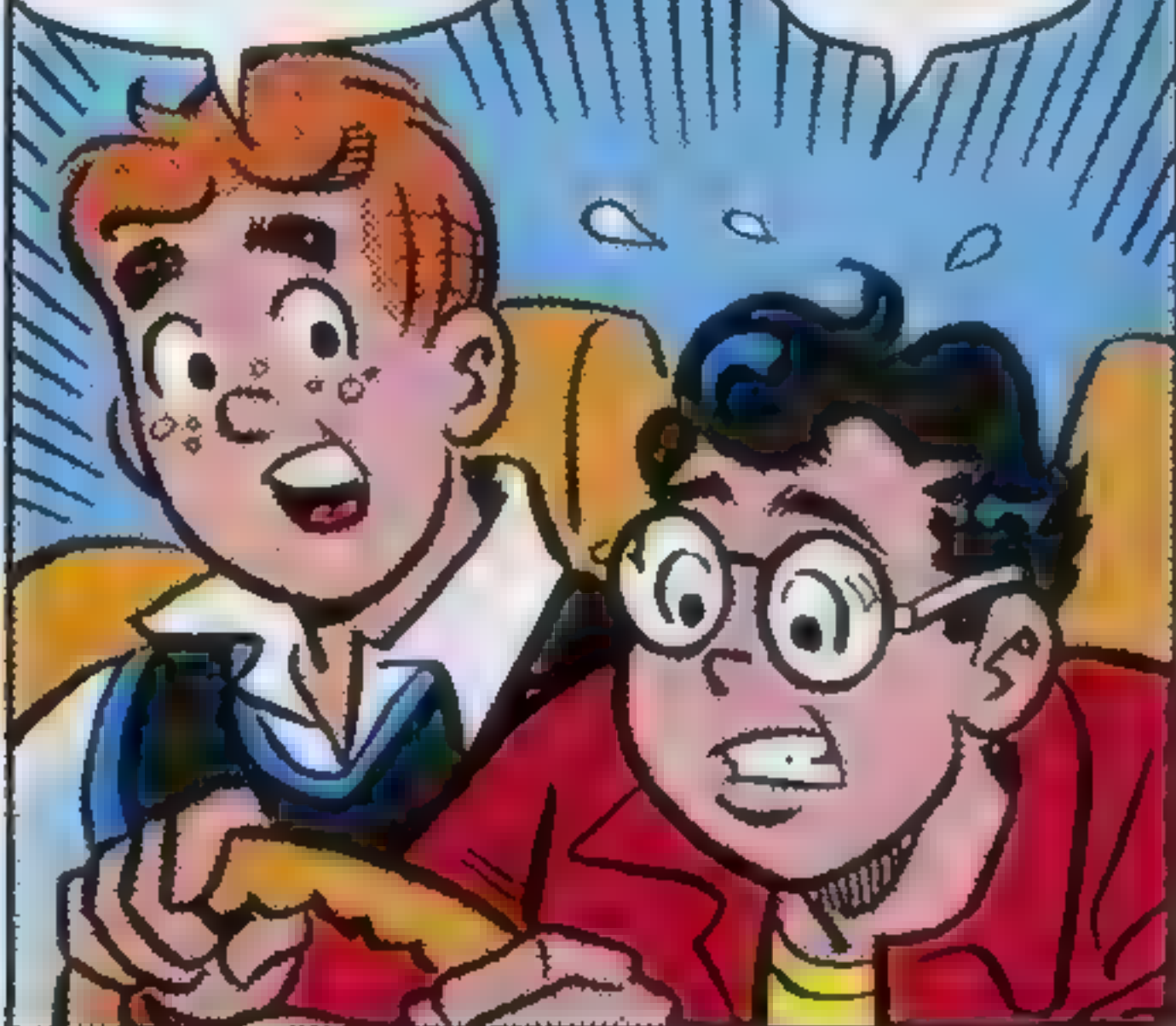


LISTEN, DILT... ALL THE YEARS I'VE SPENT FISHIN' AROUND HERE, I *KNOW* THAT VELVET RIVER EMPTIES INTO LOGGERS' POND AND AT THE SOUTH END OF LOGGERS' POND IS...

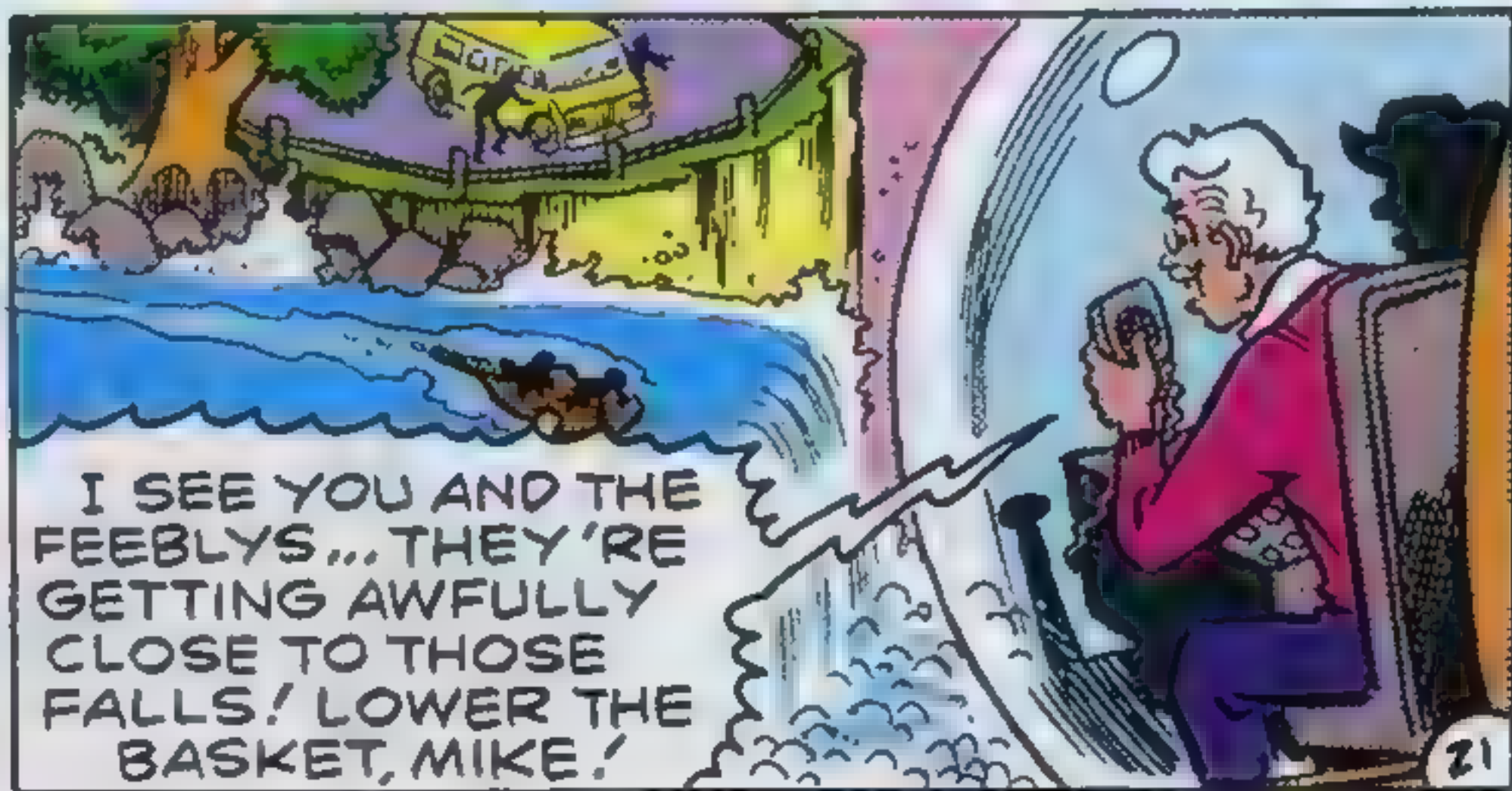
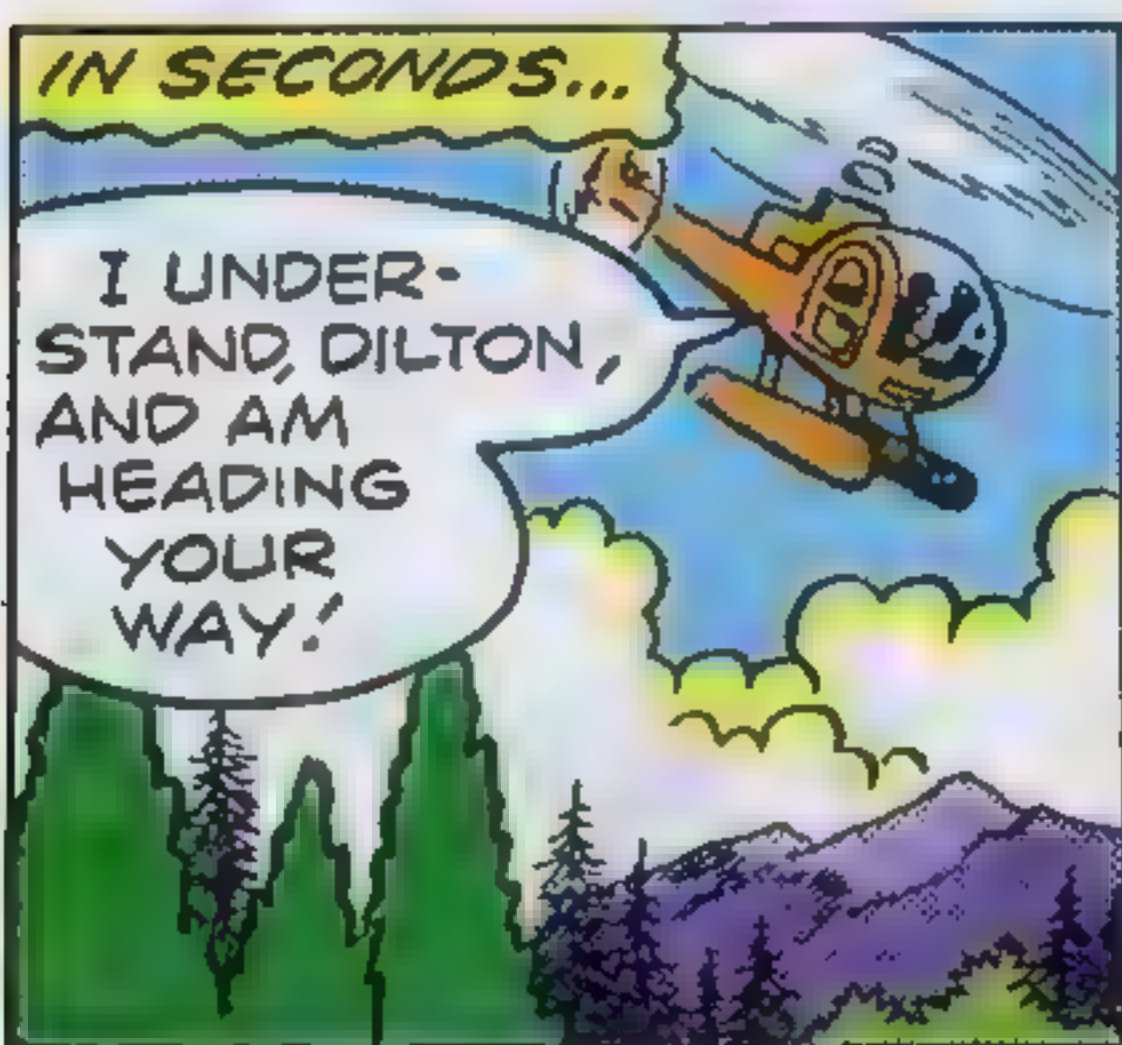
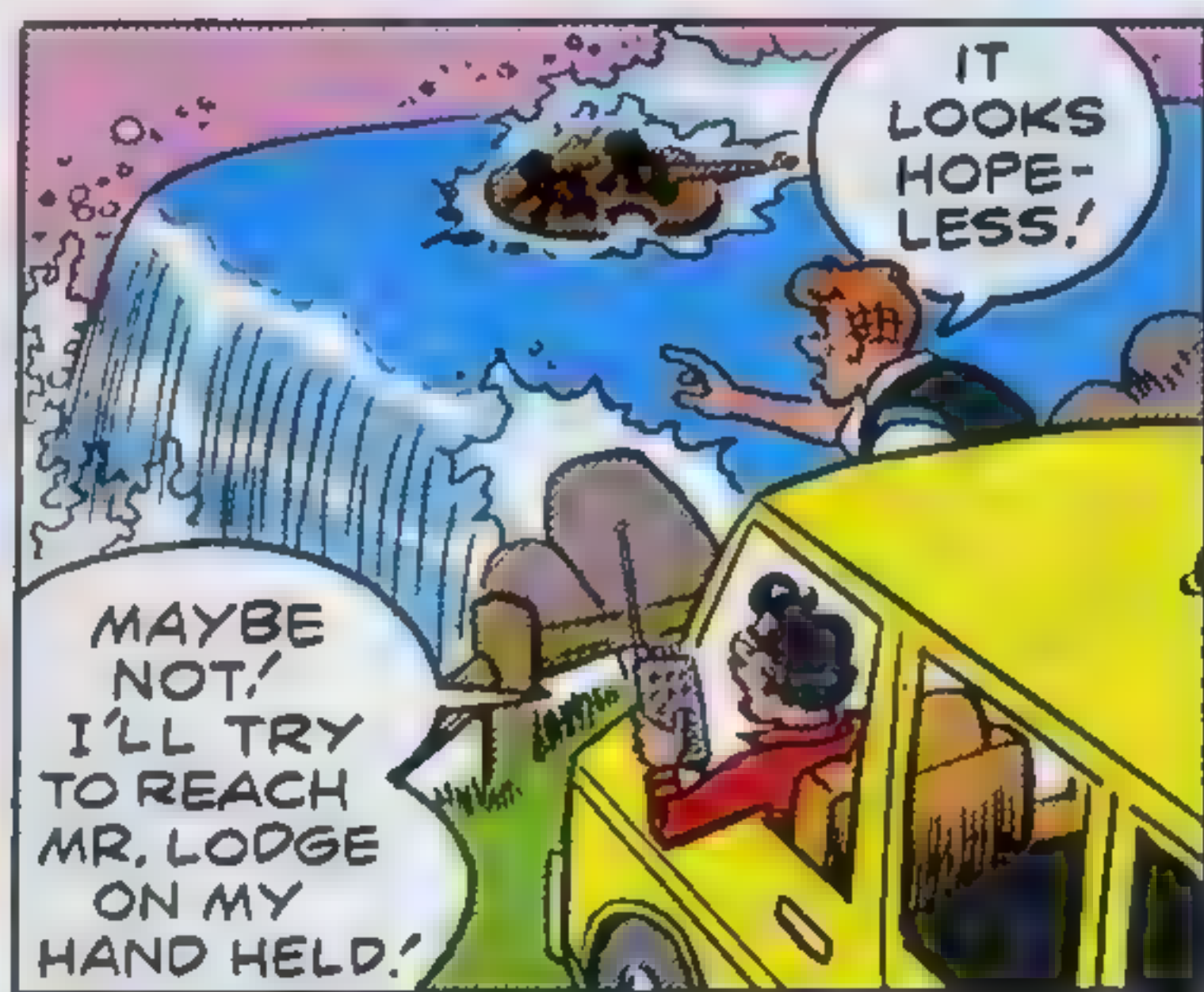
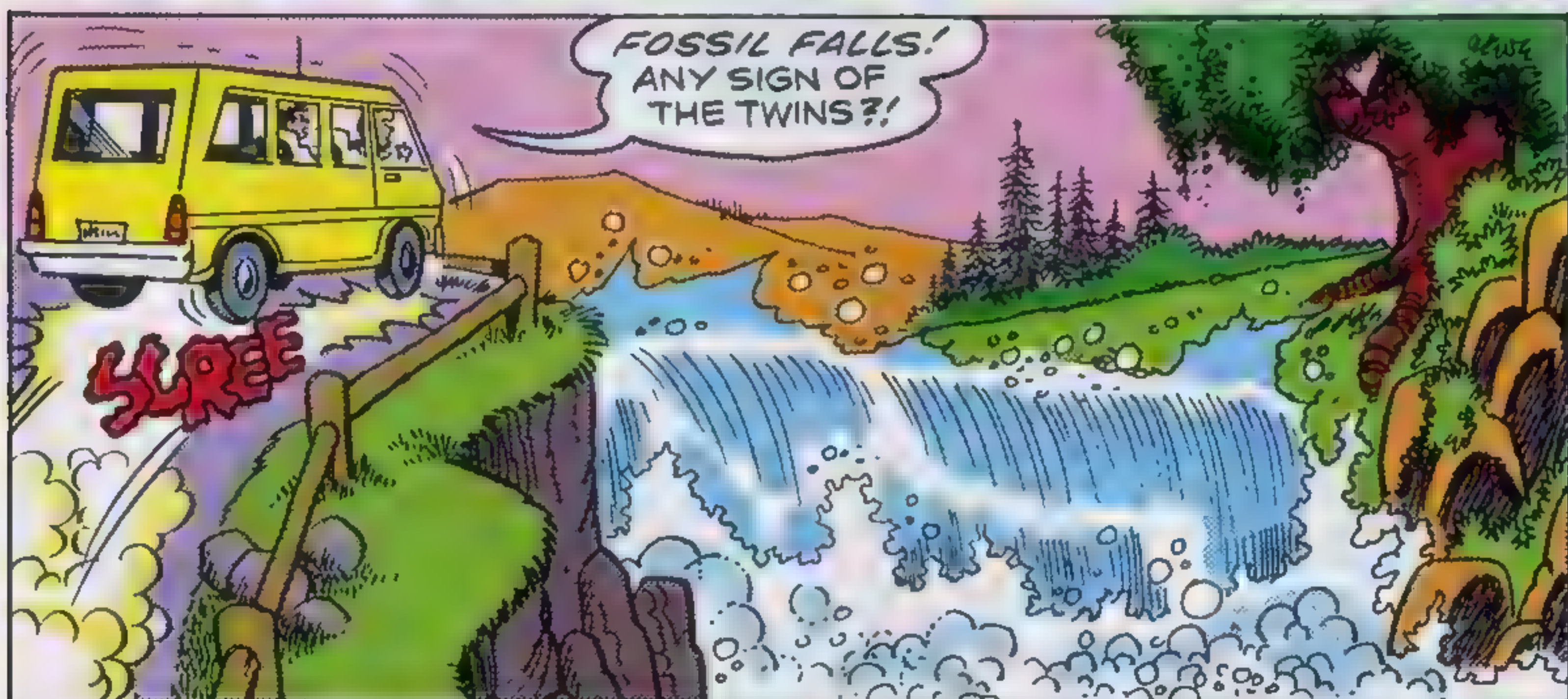


... FOSSIL FALLS! GET MOVIN'! I'LL SHOW YOU A SHORT CUT!!

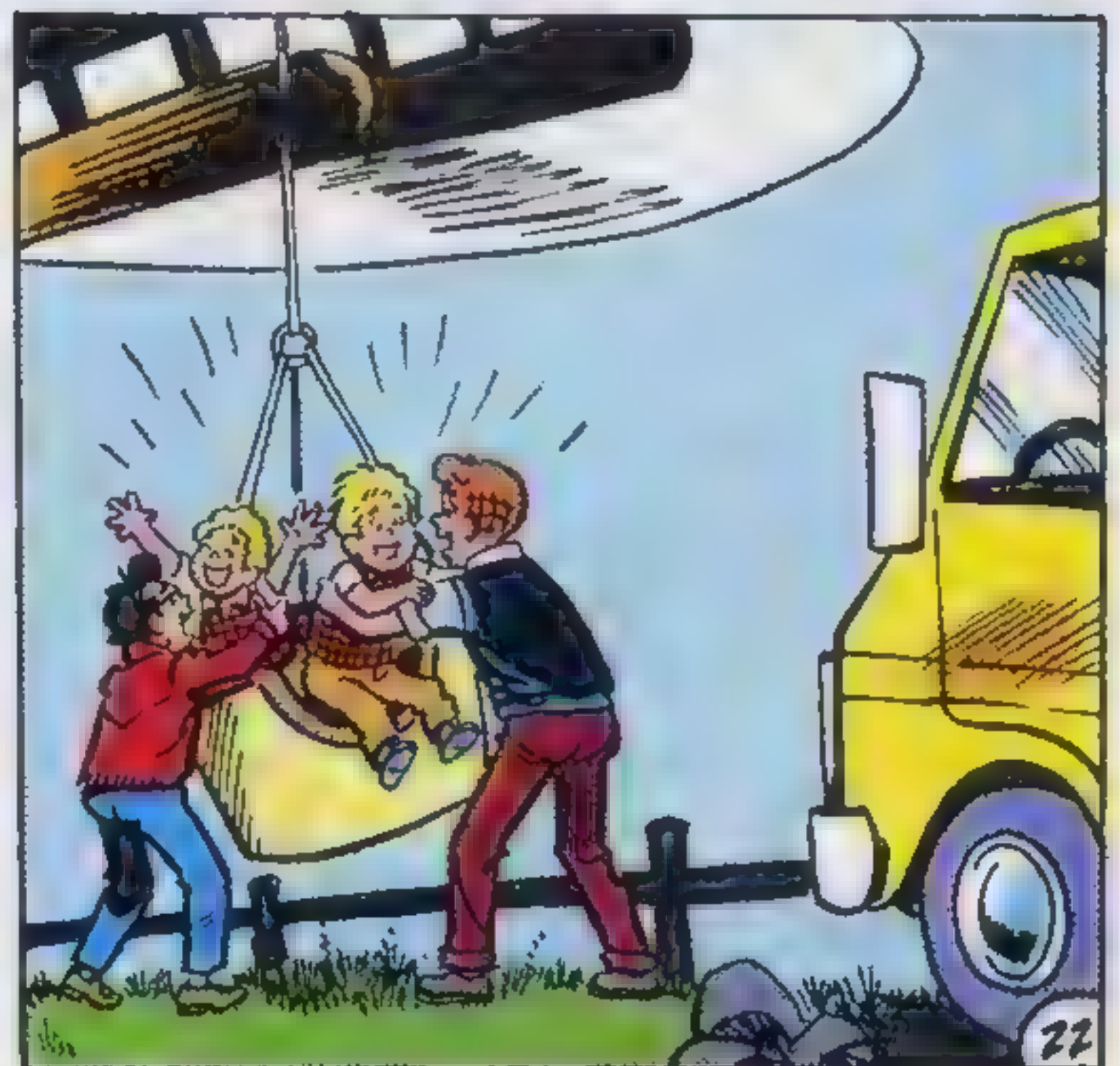
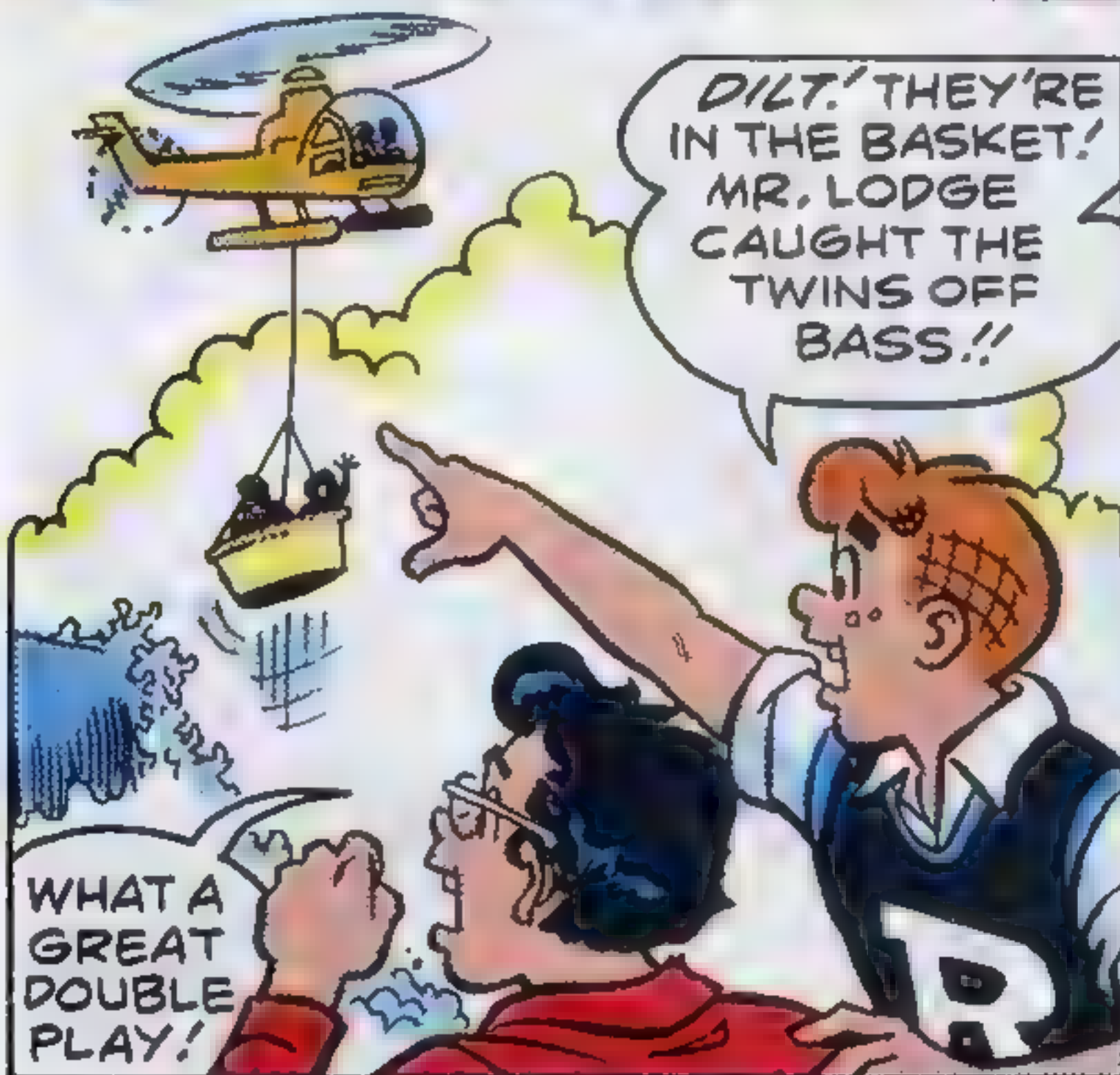
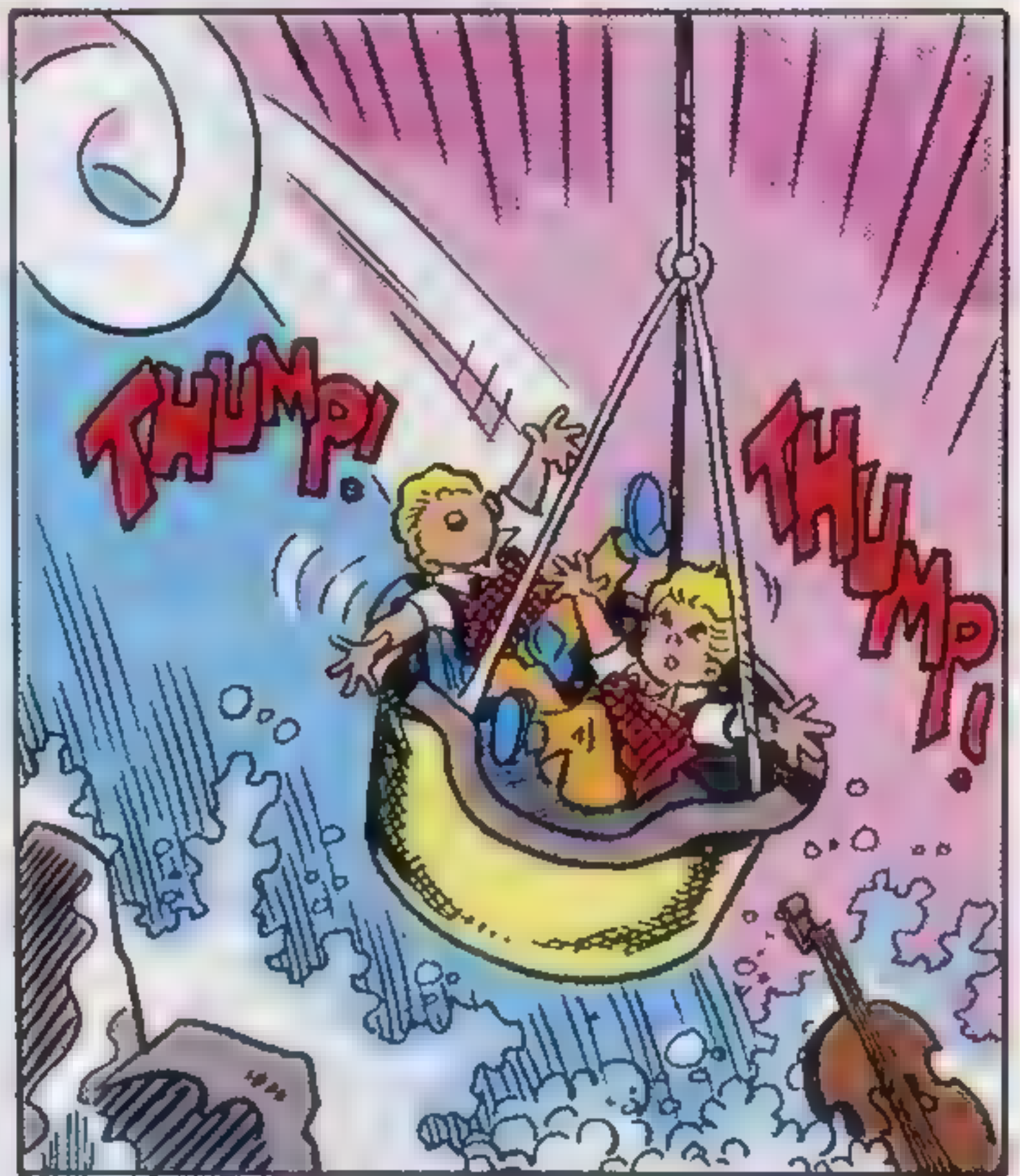
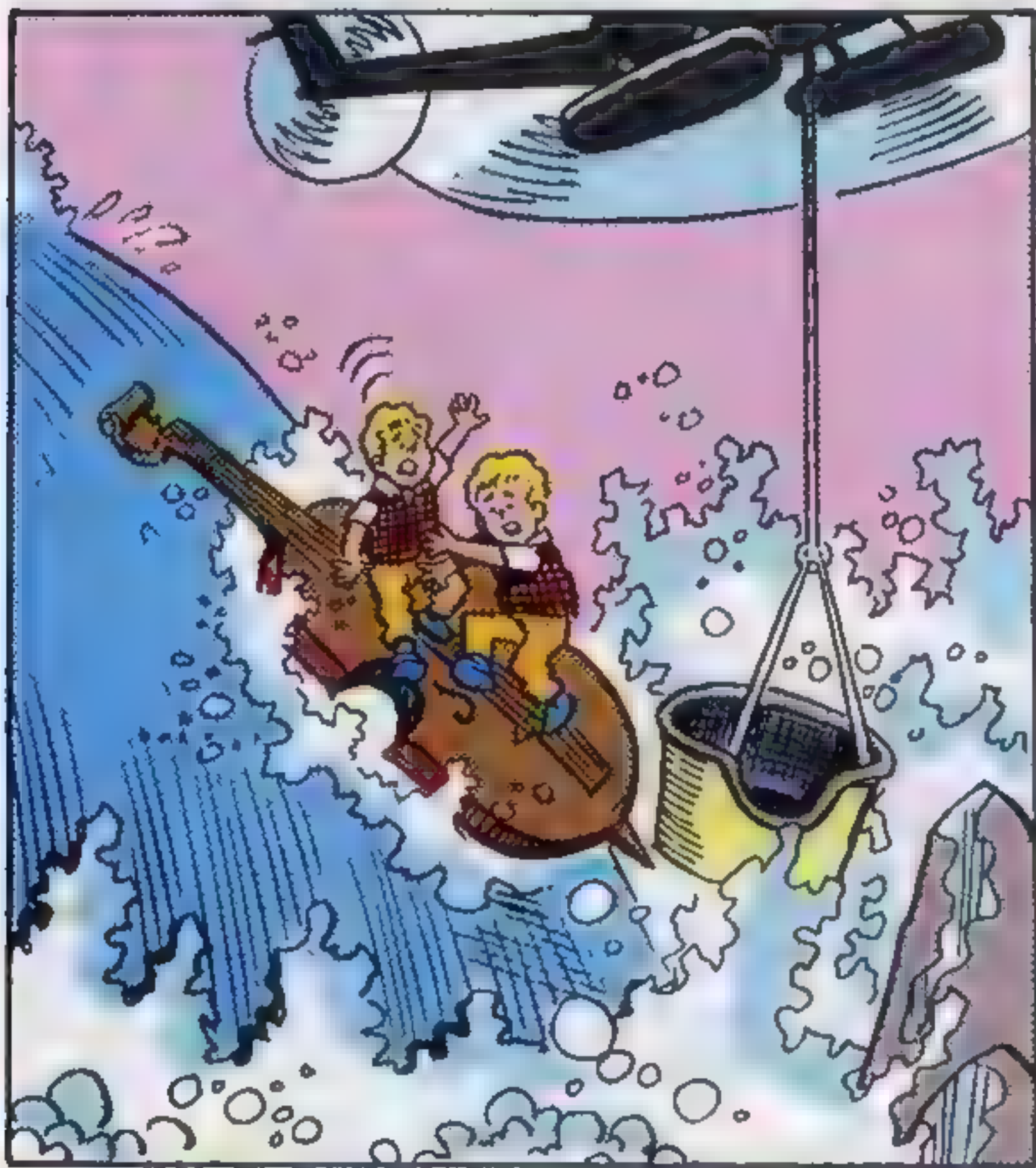
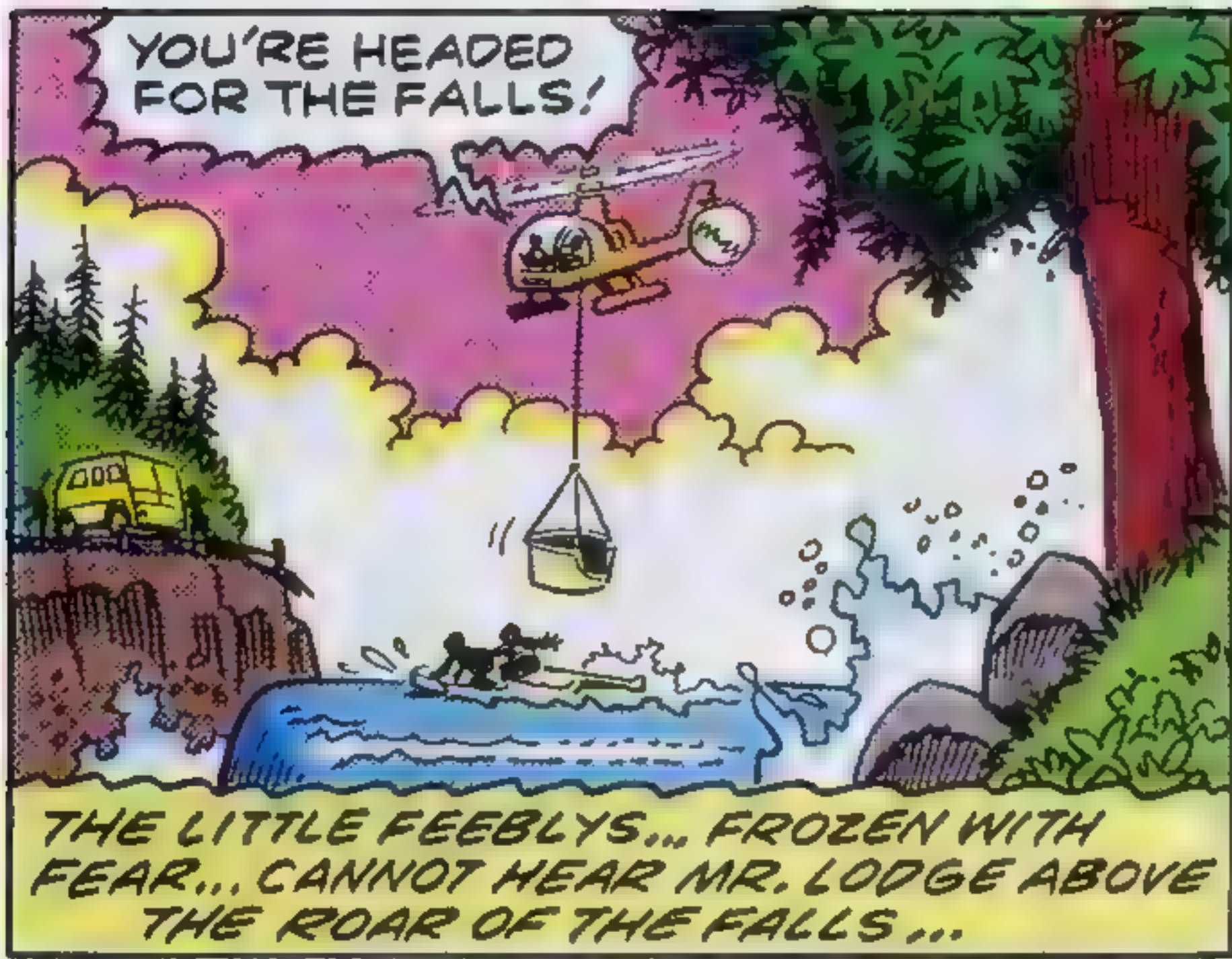
... ULP! I GET THE MESSAGE!



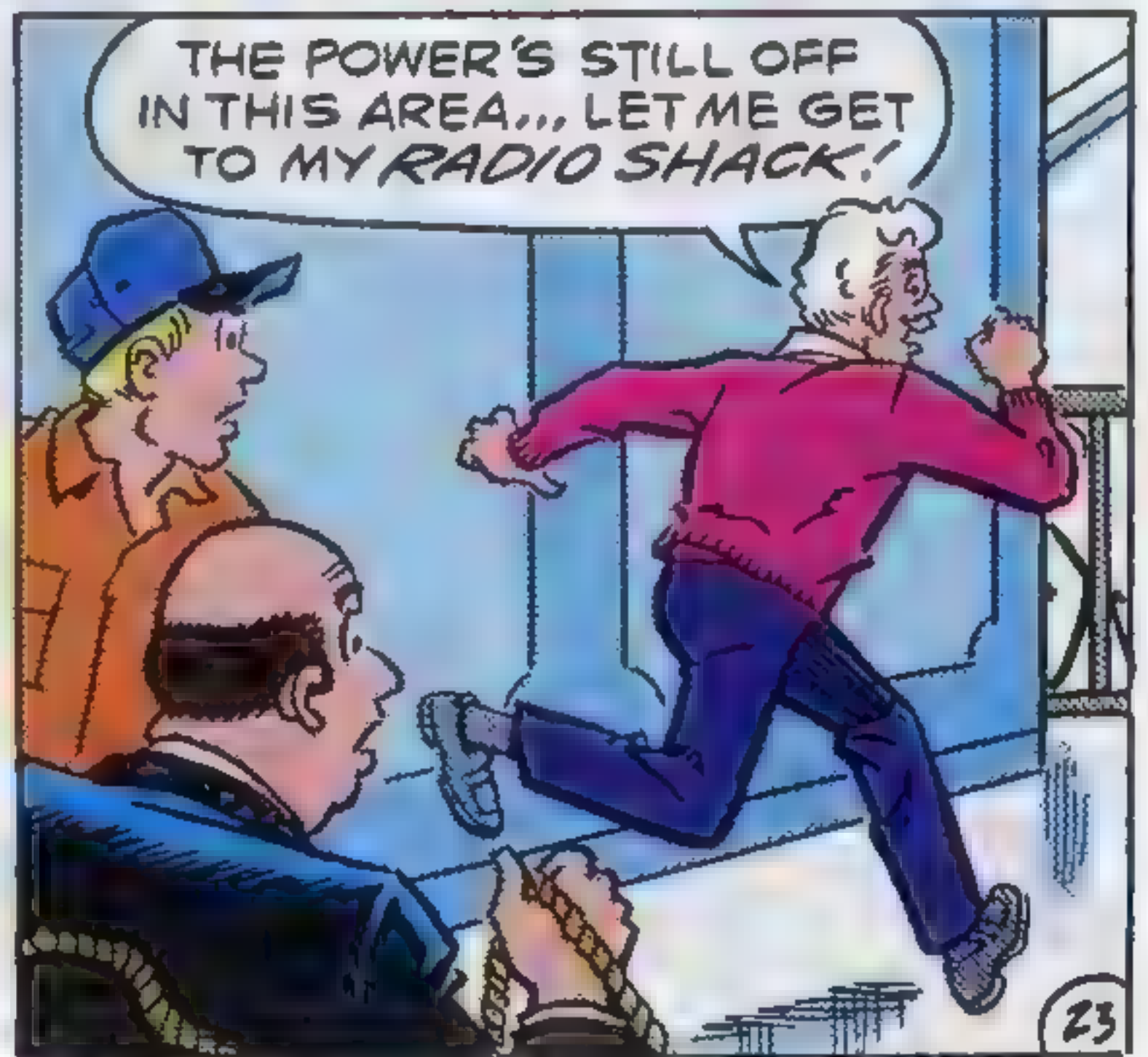
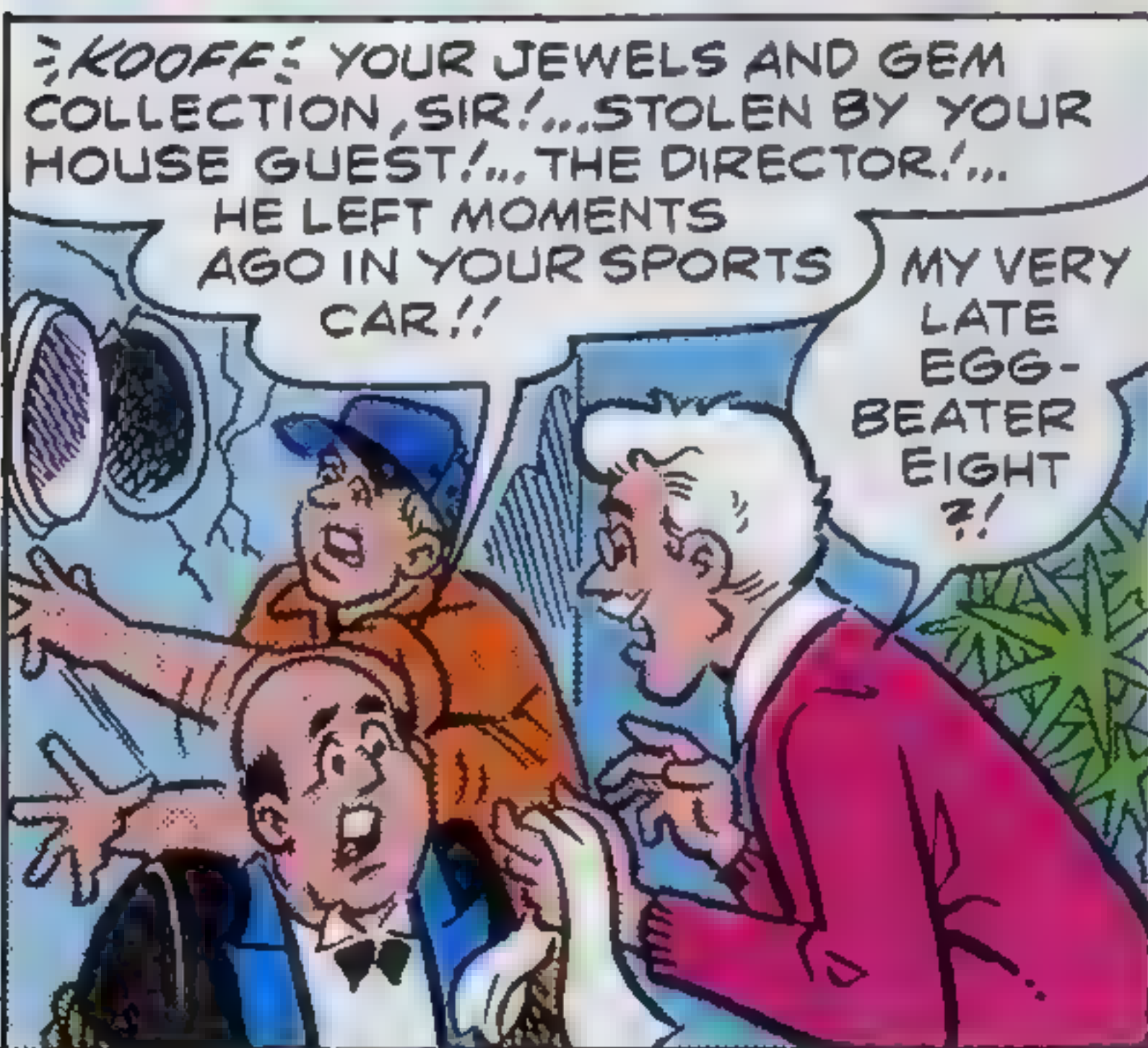
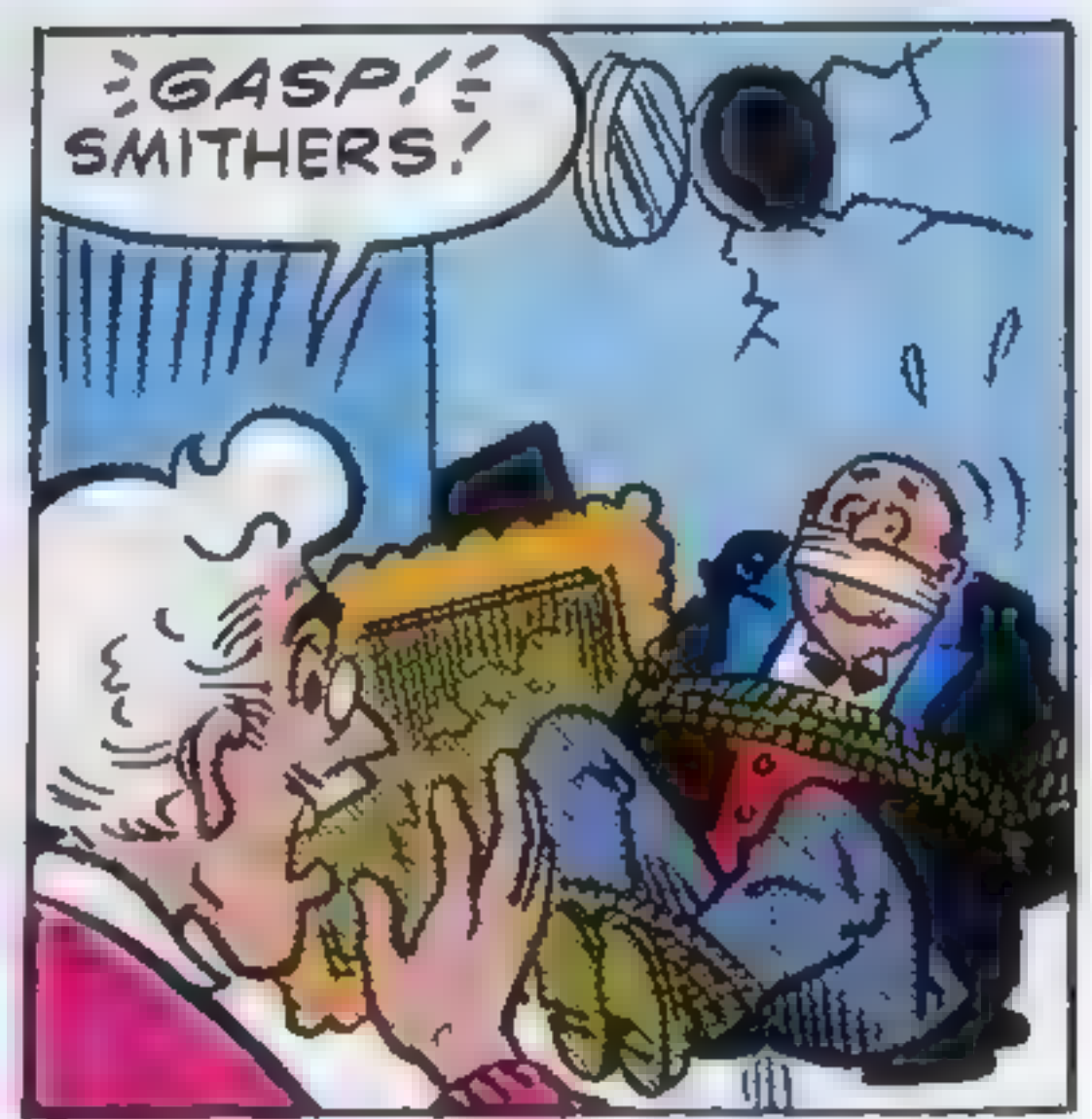
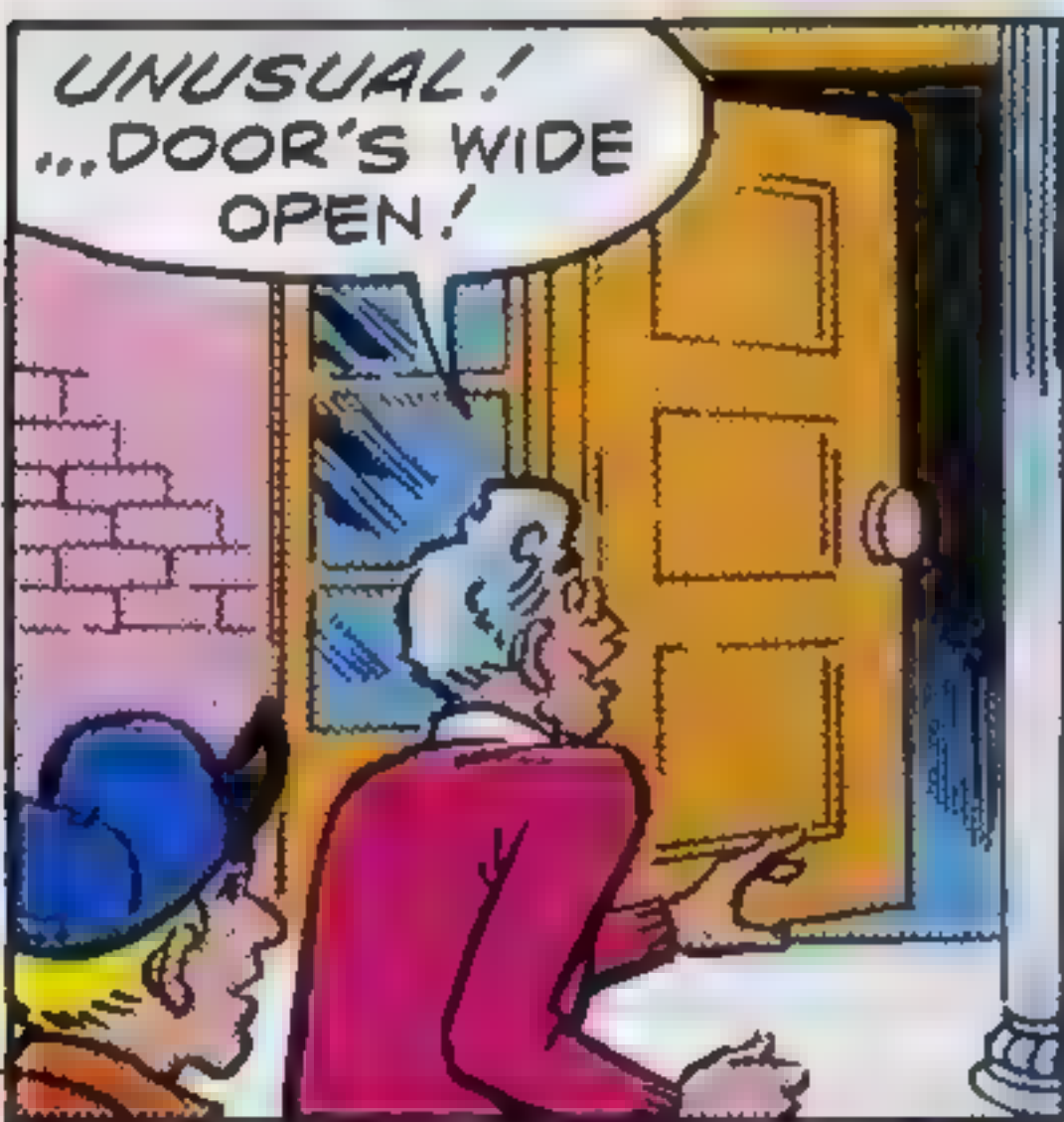
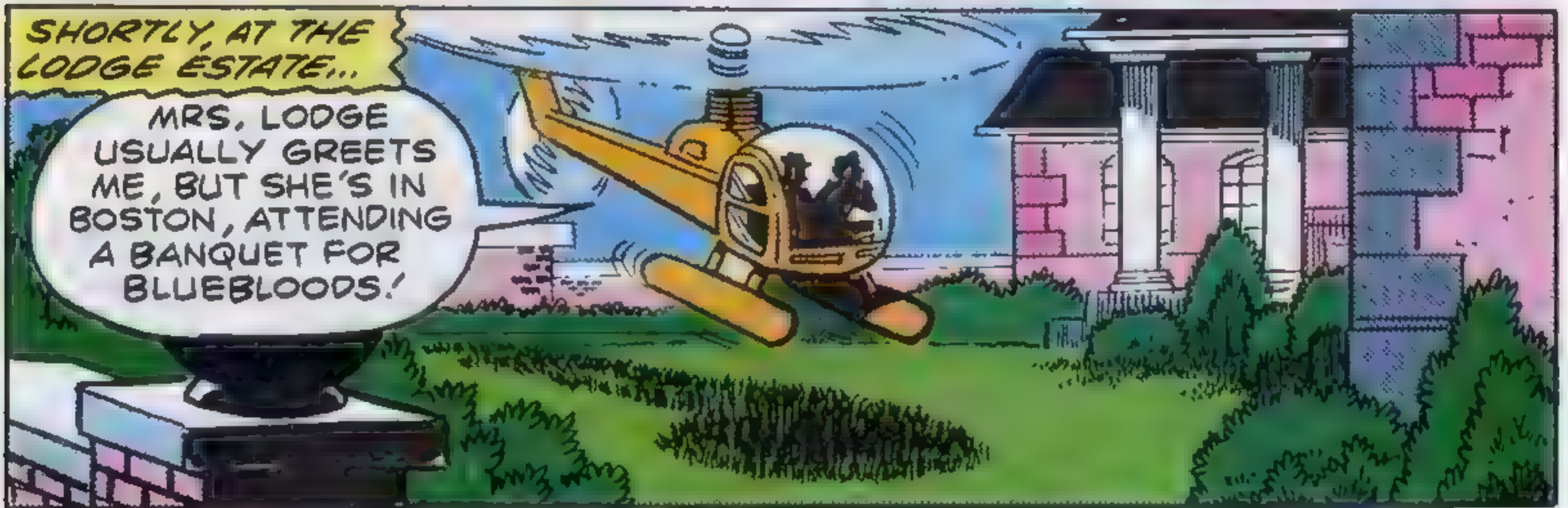
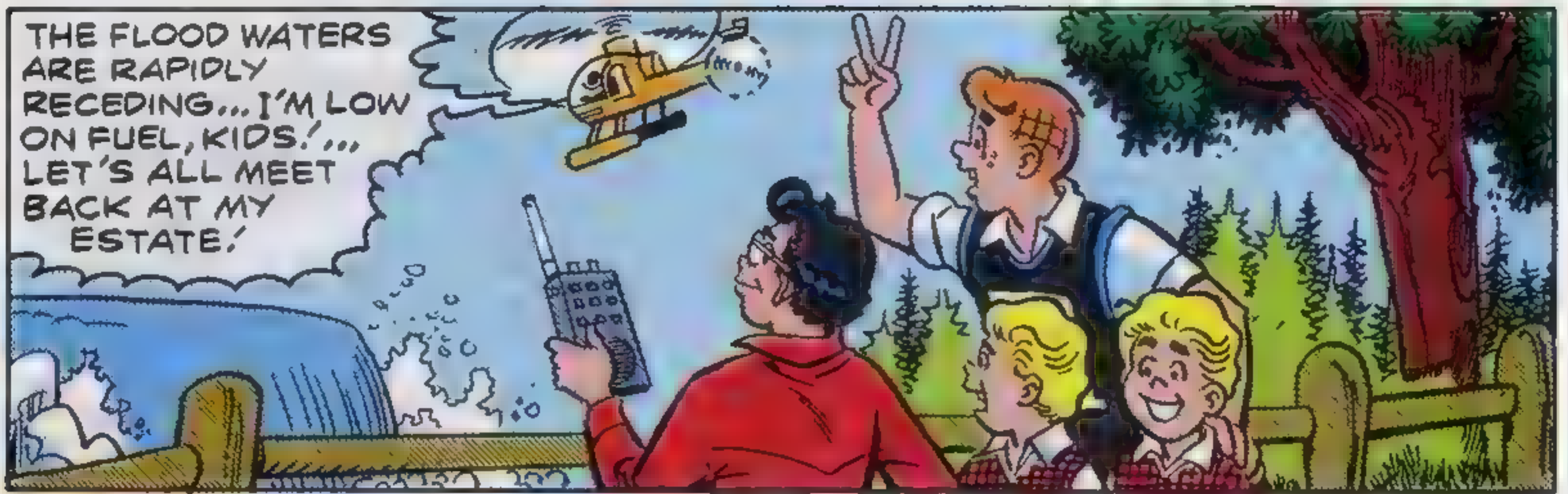




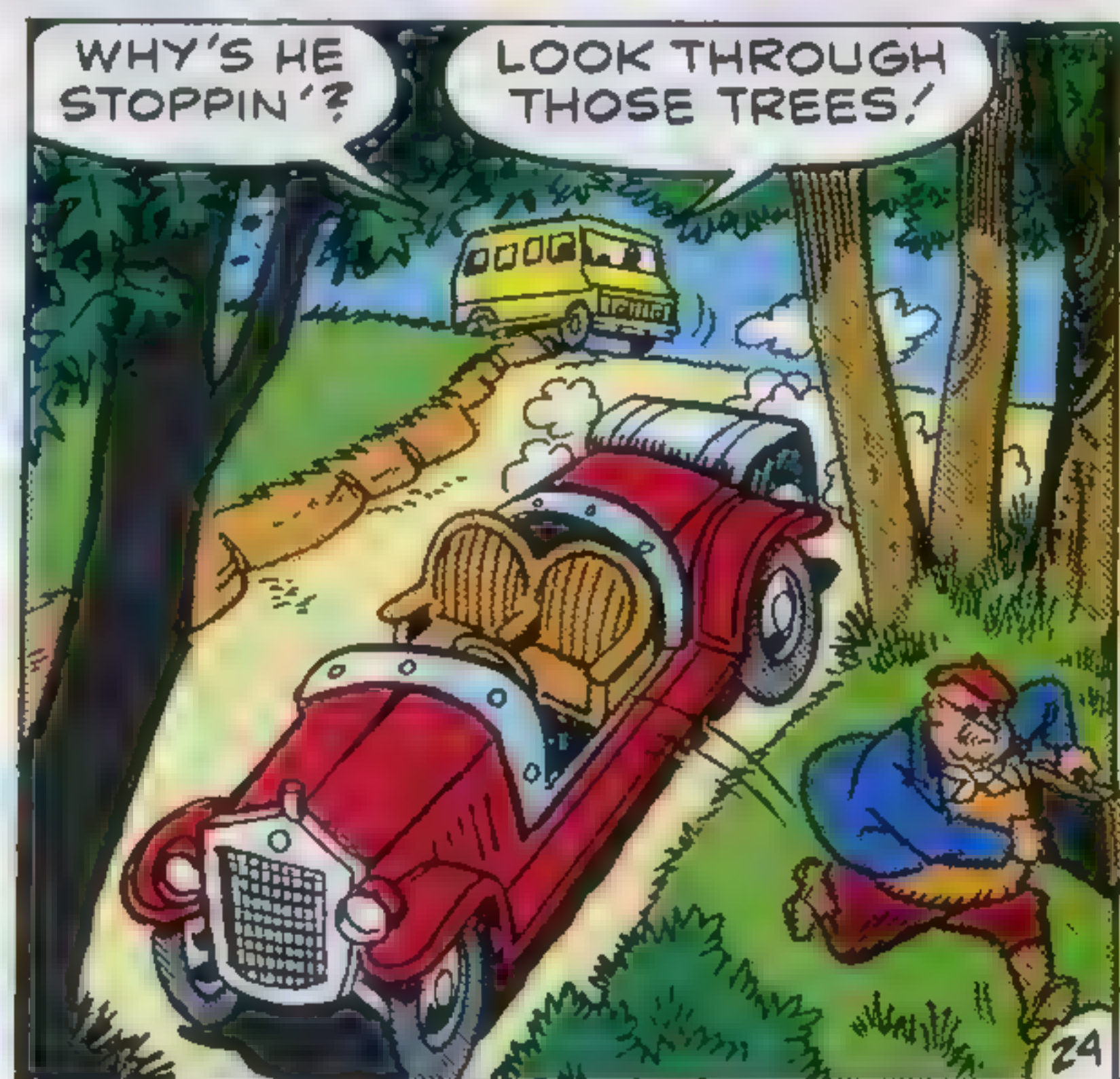
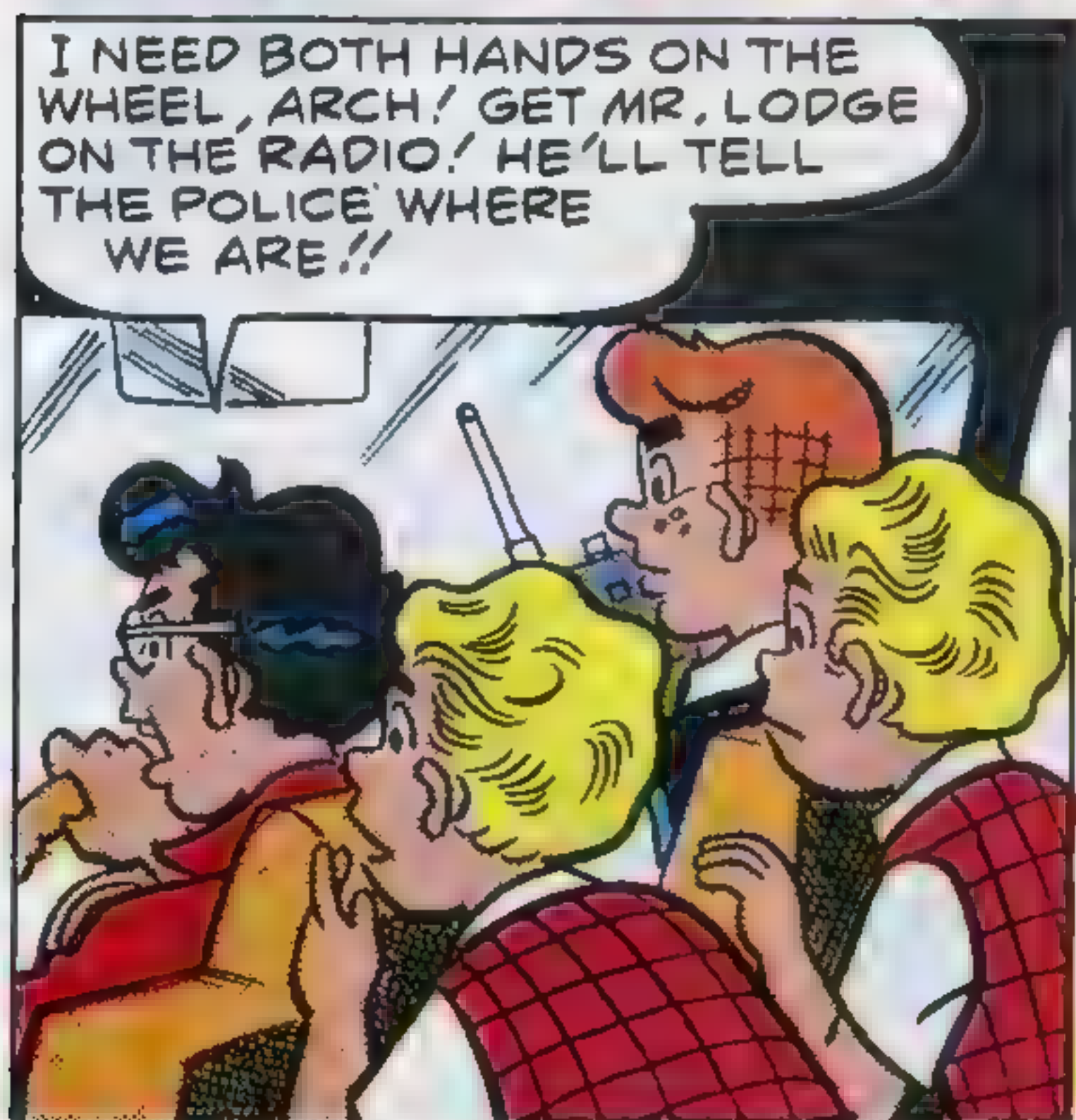
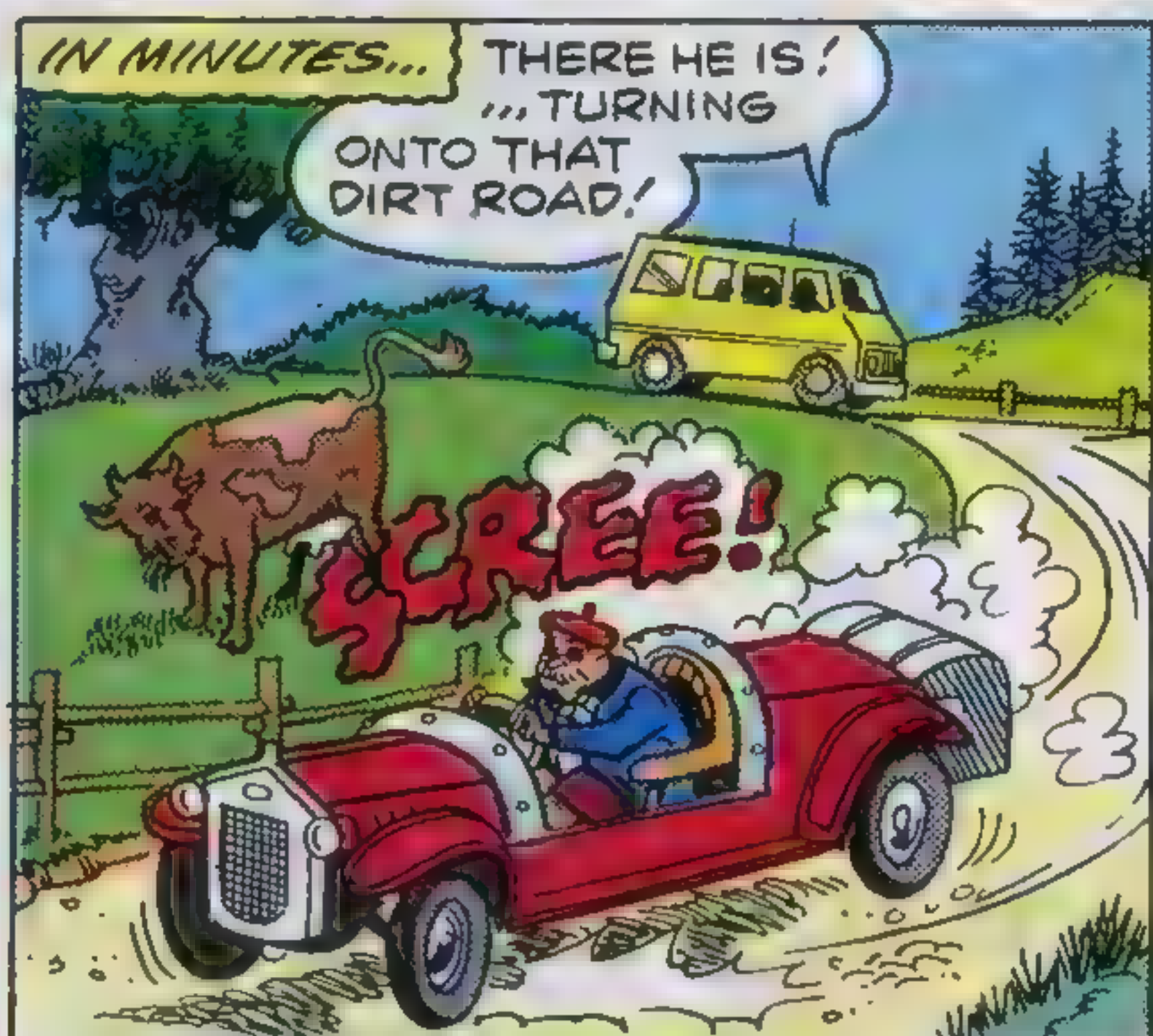
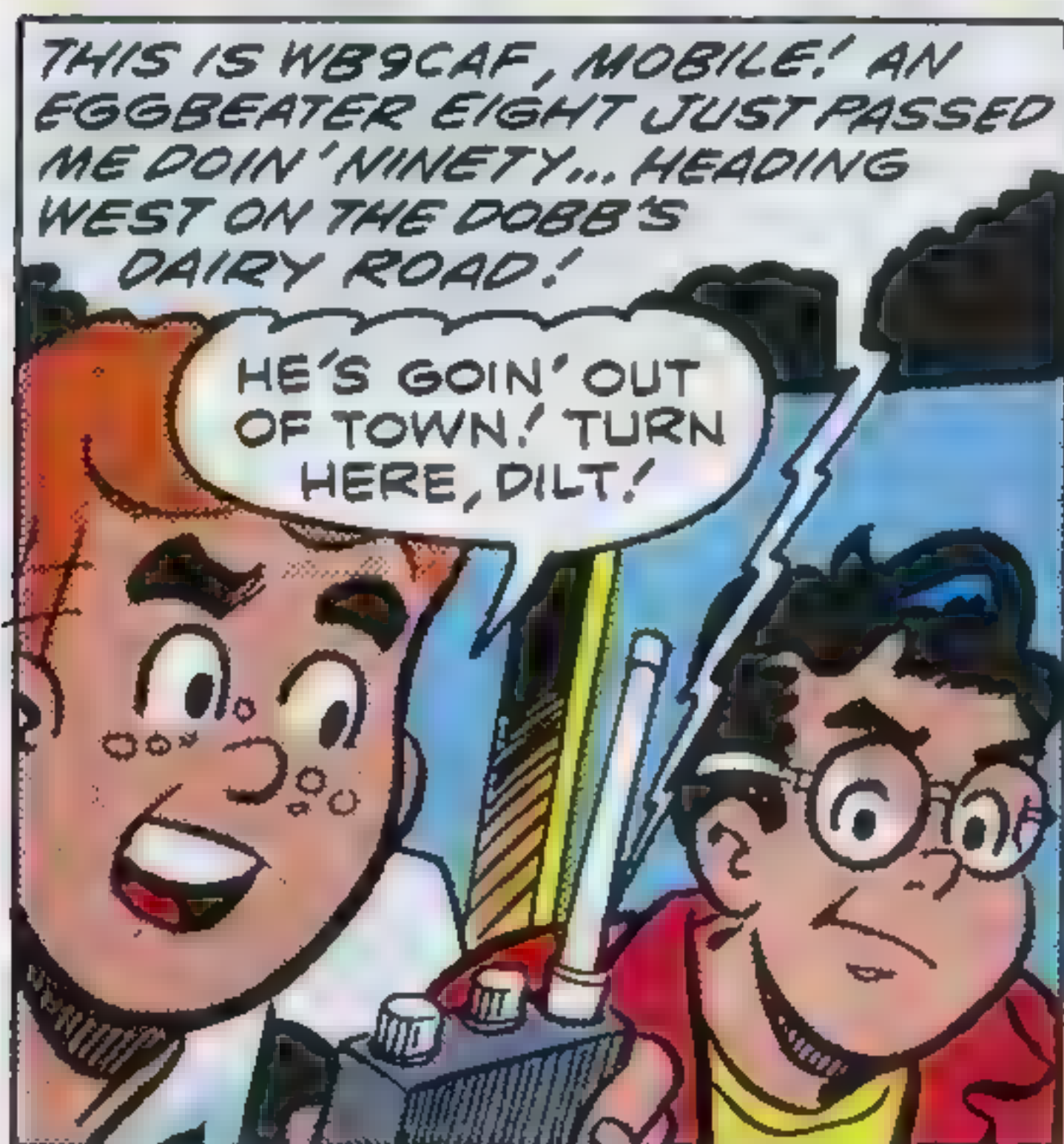
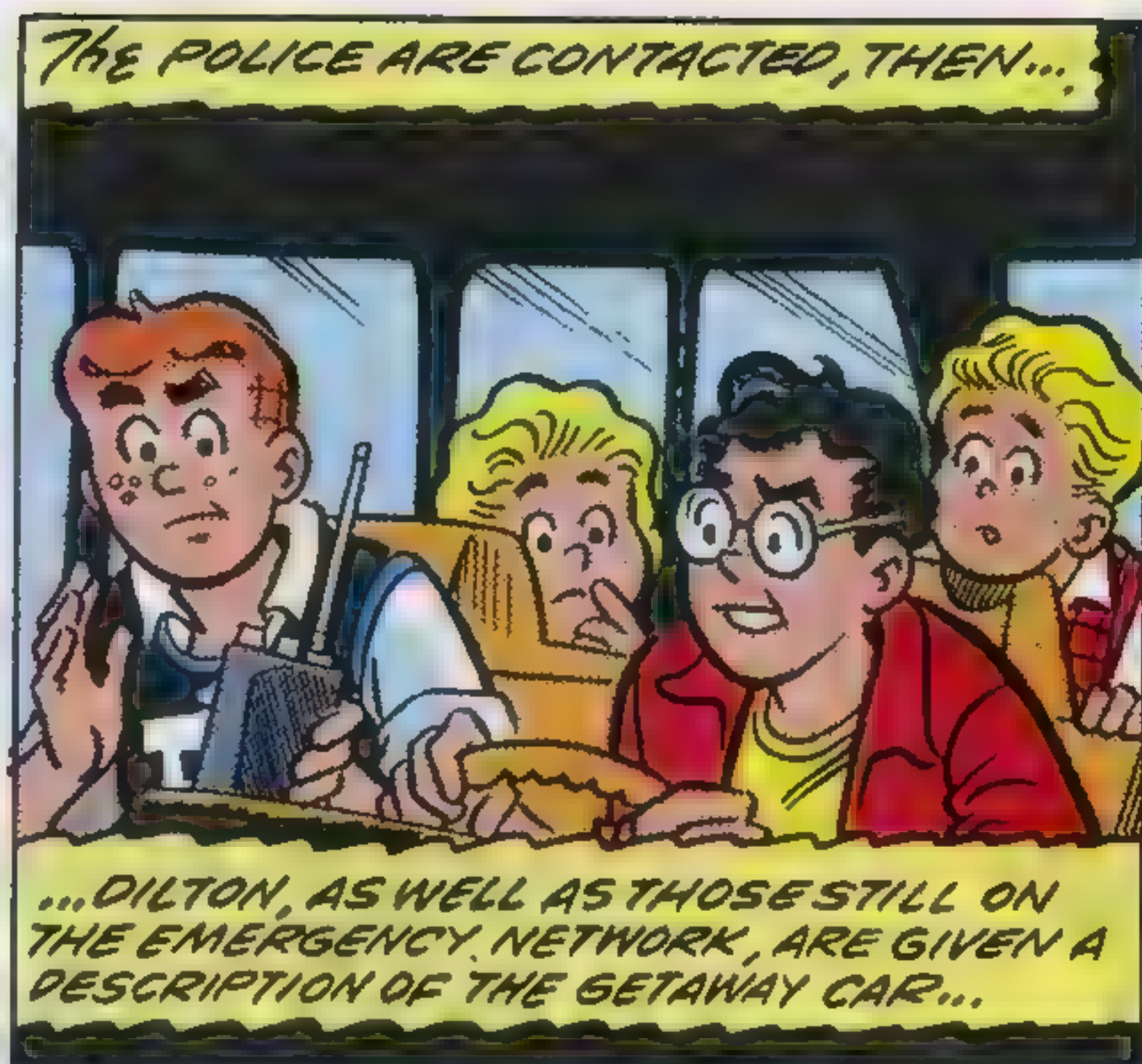
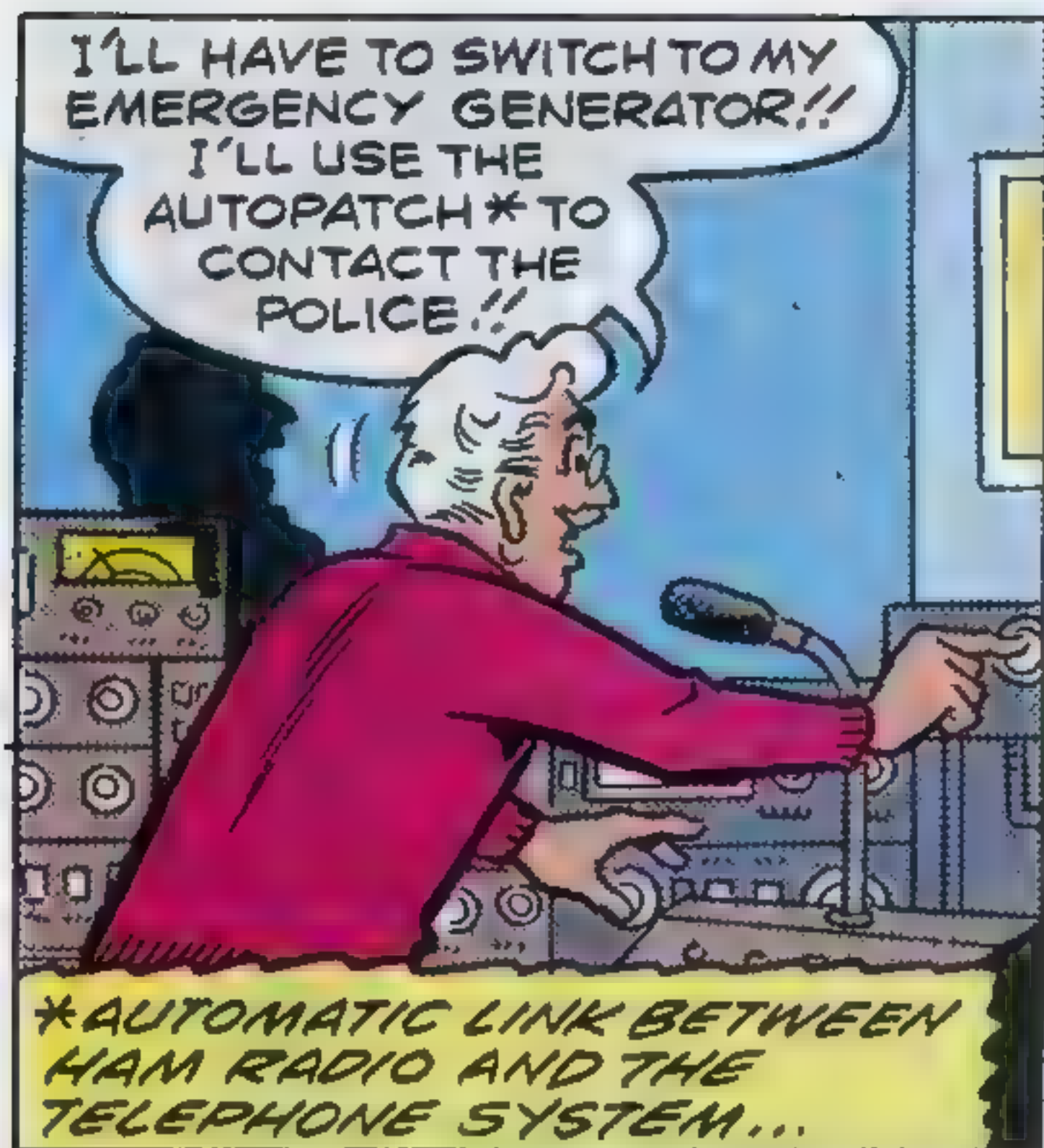




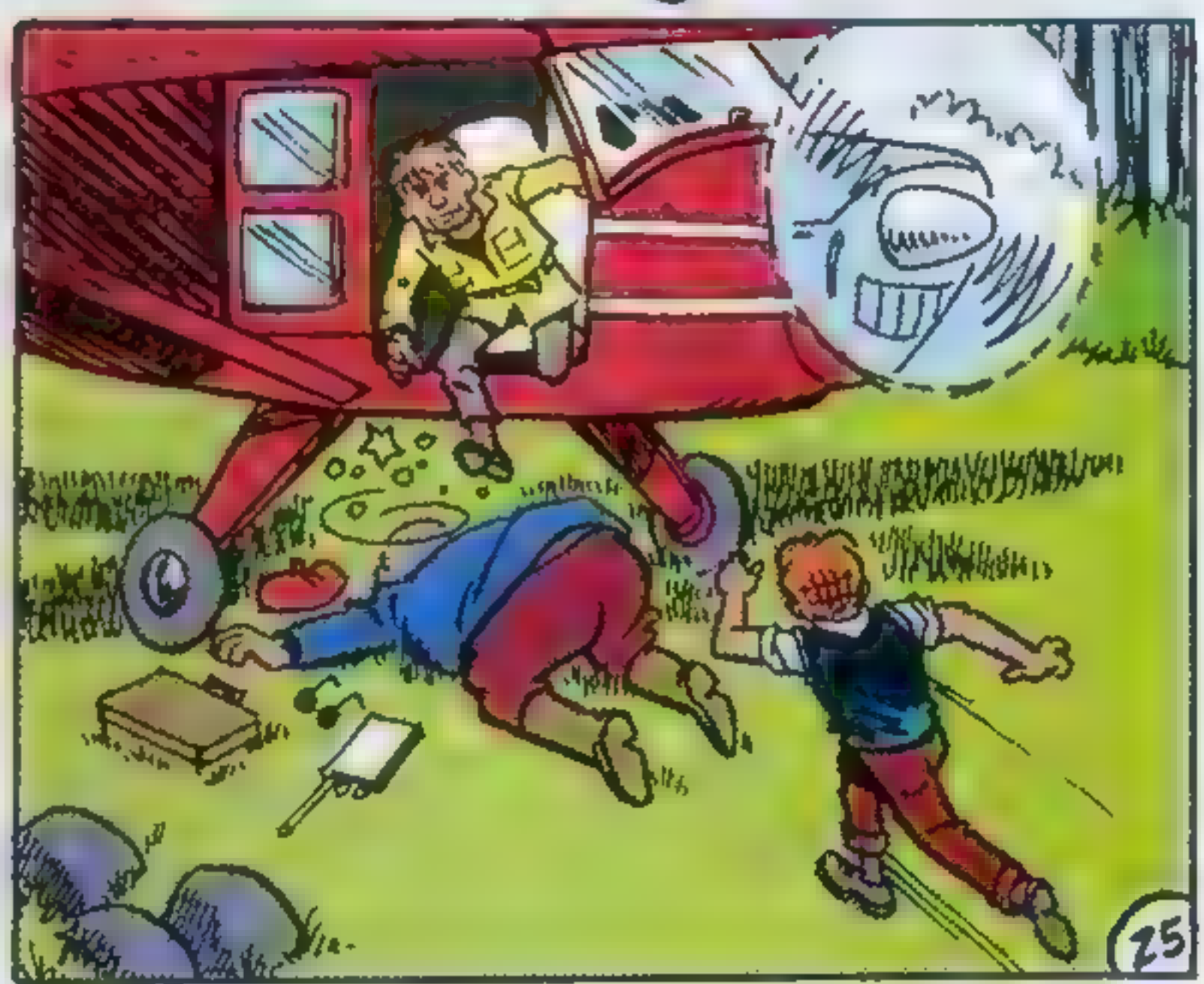
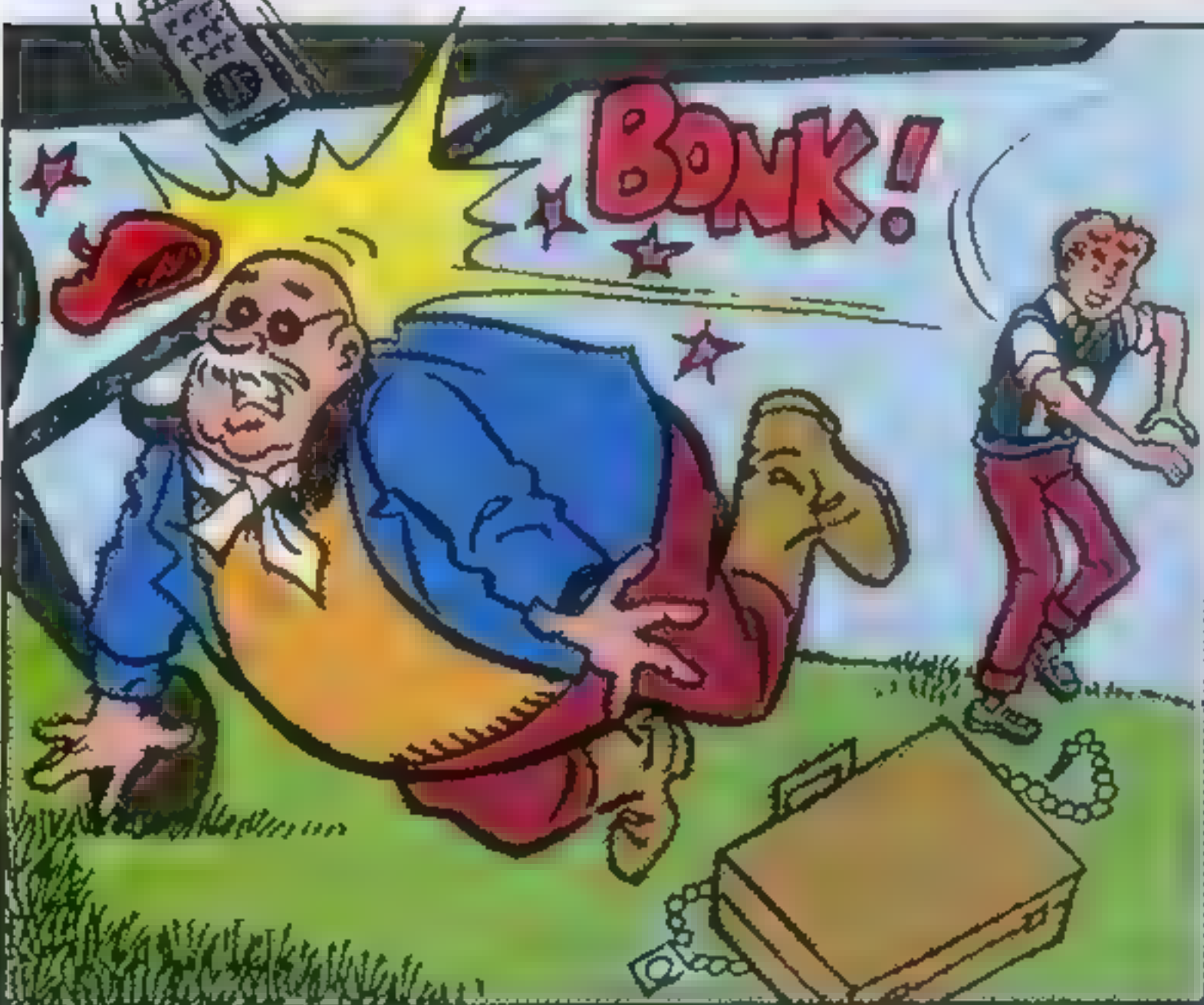
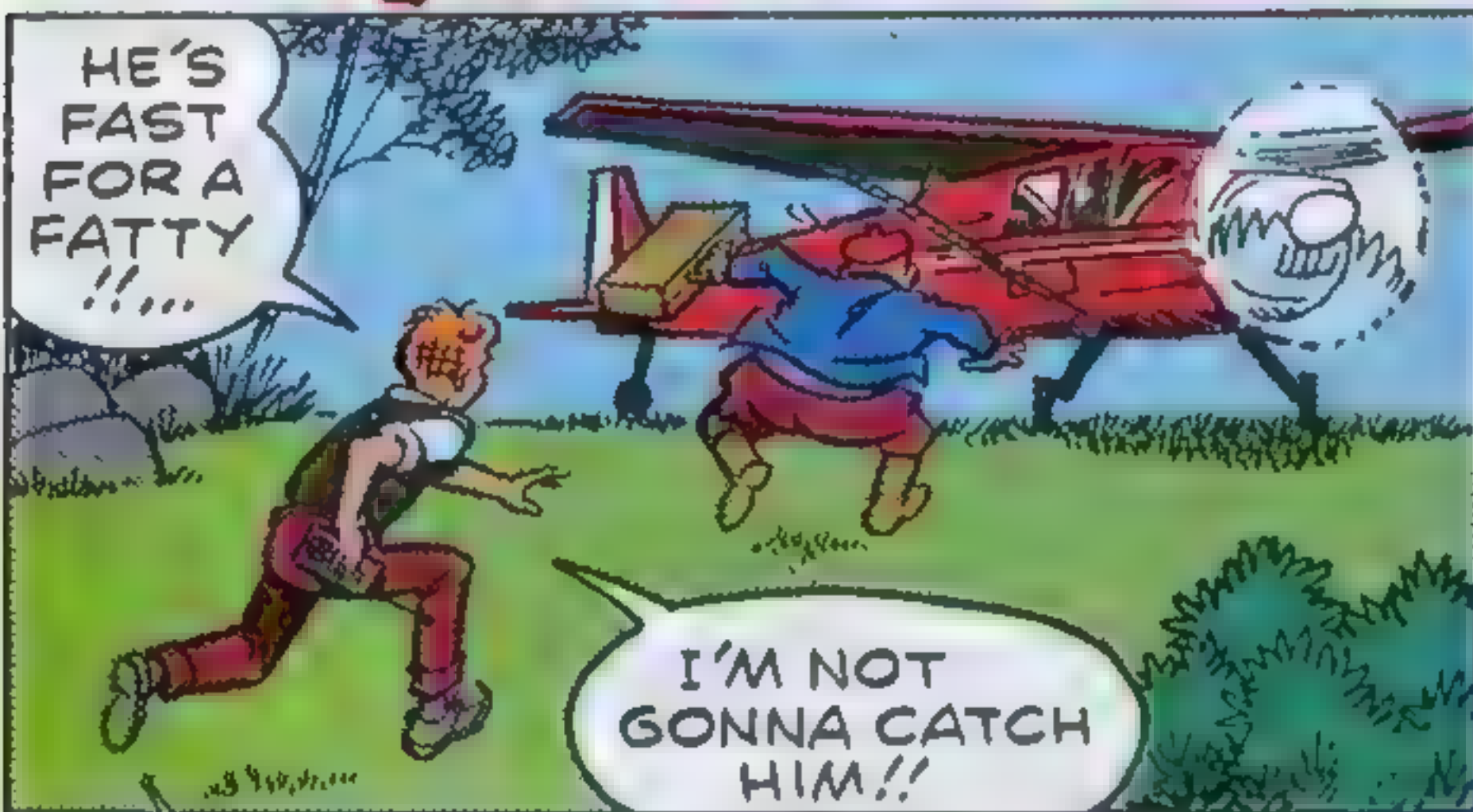
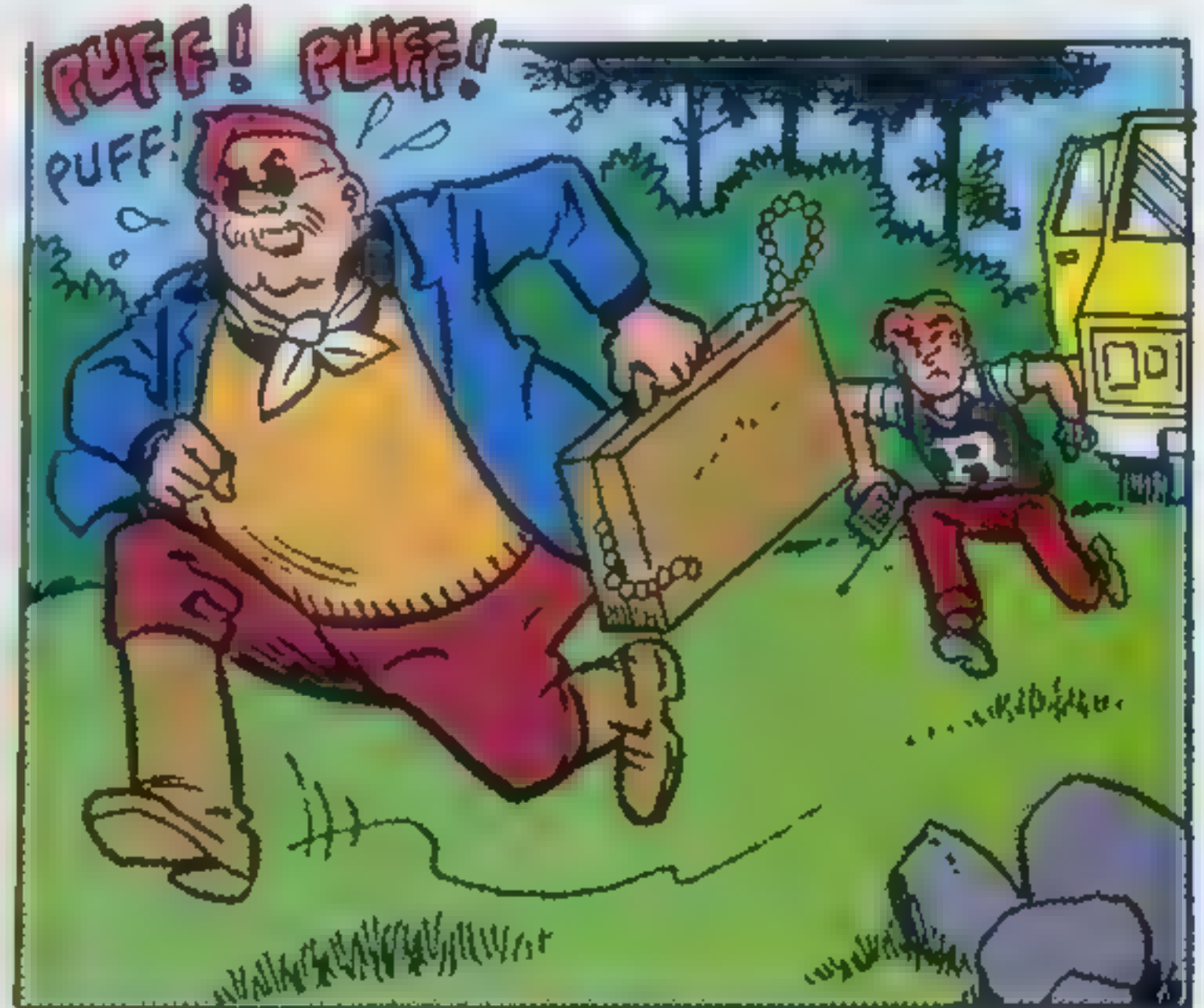
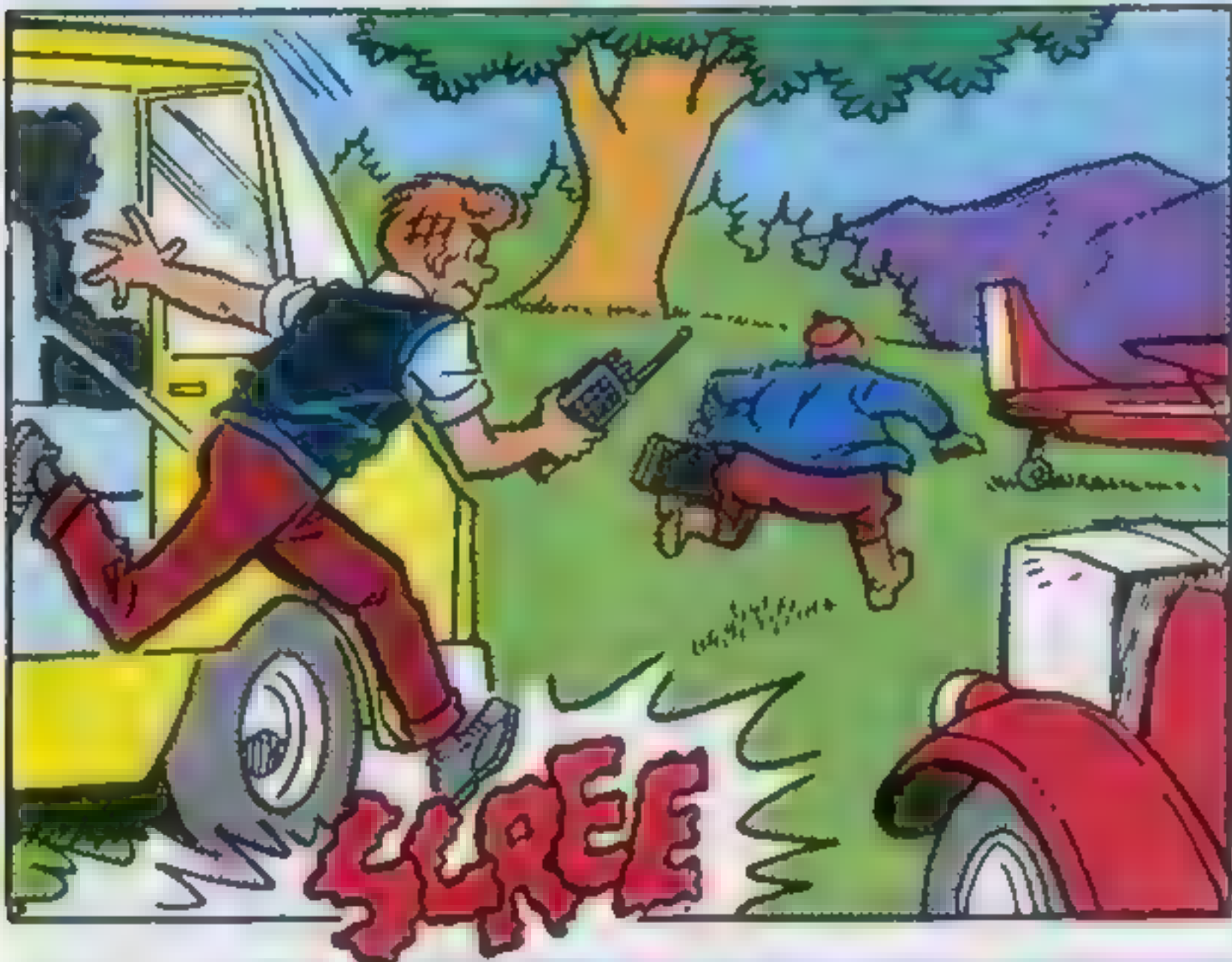
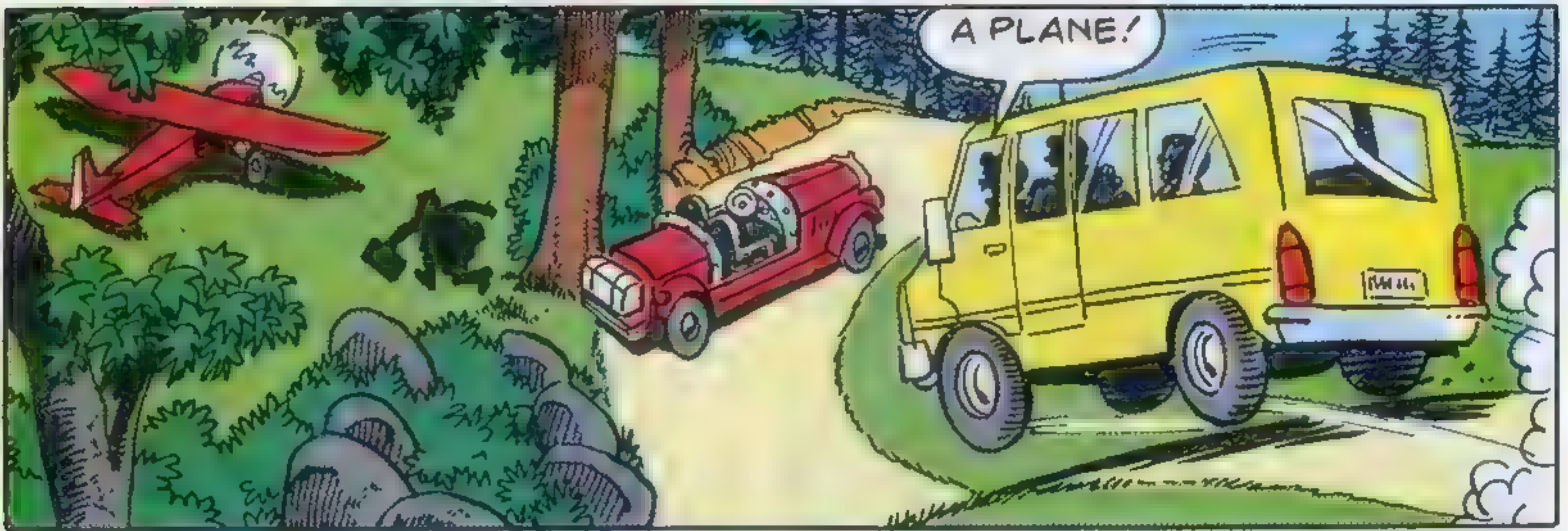




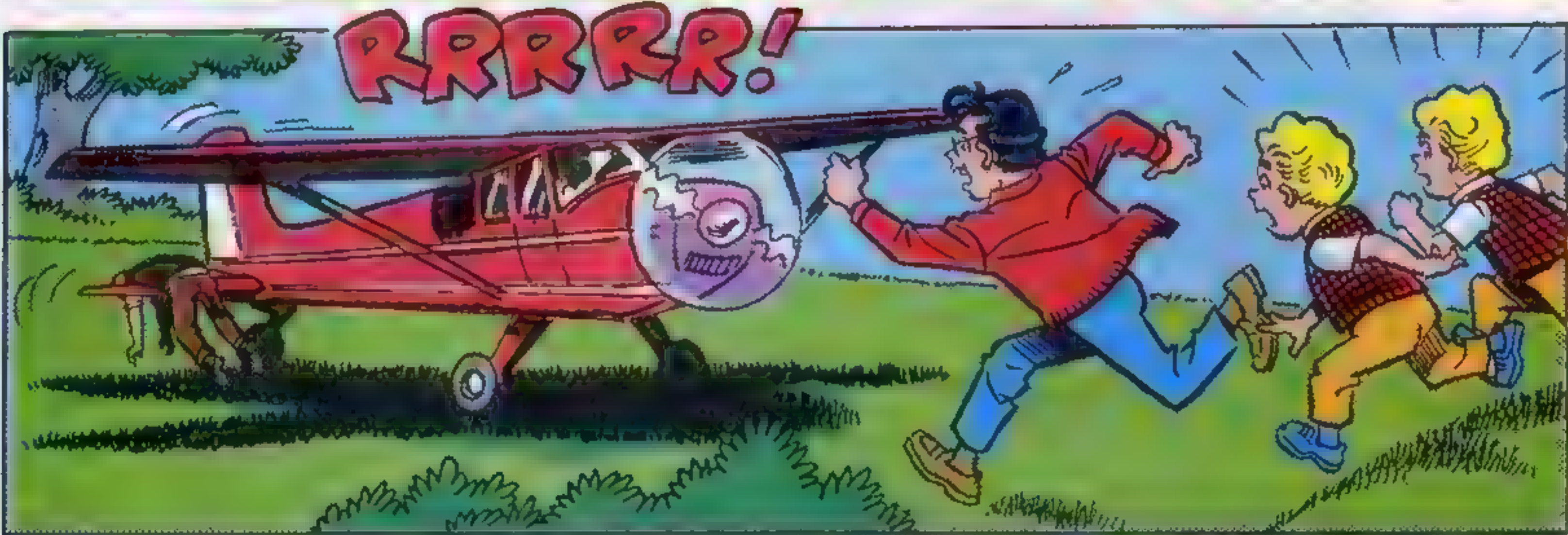
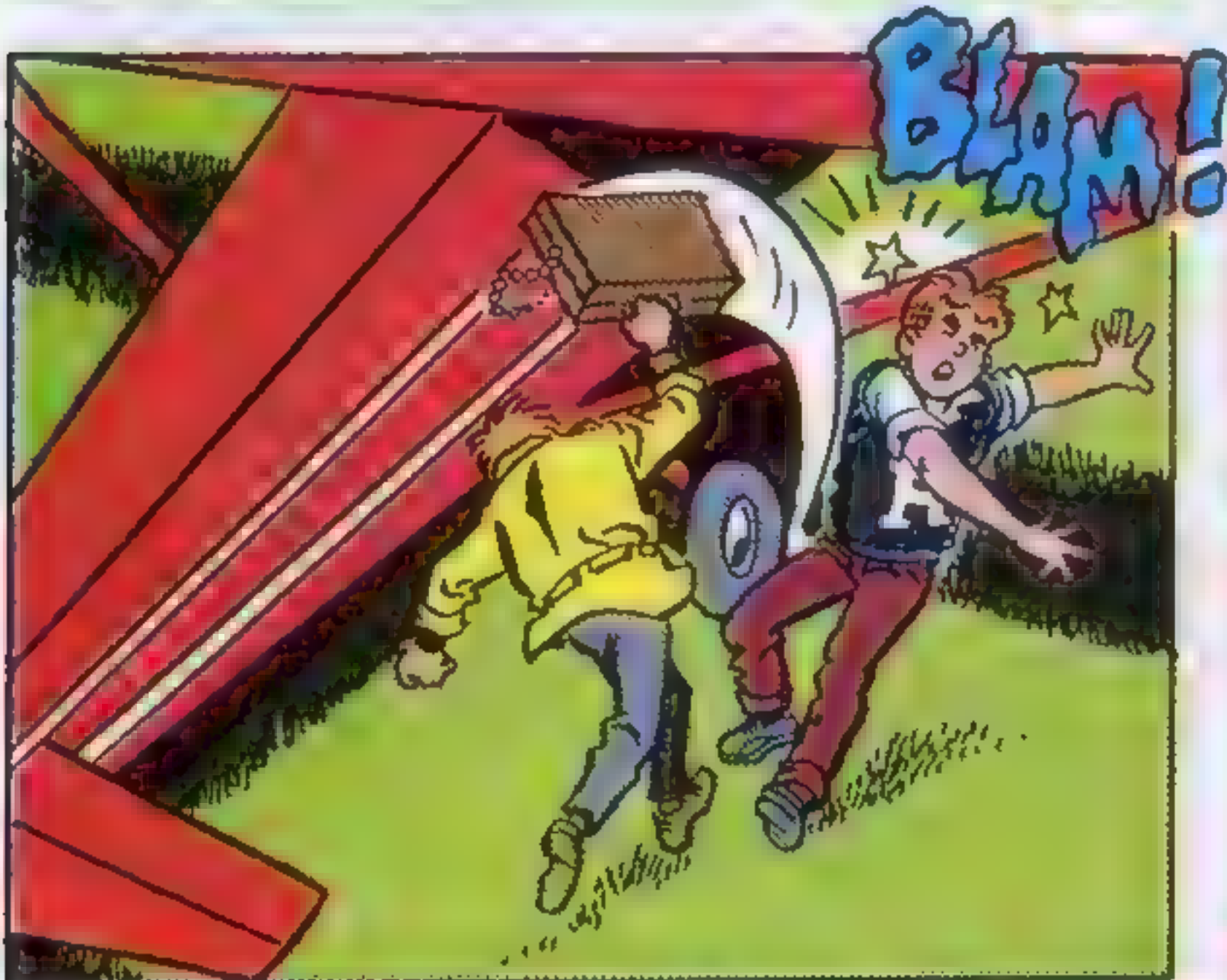
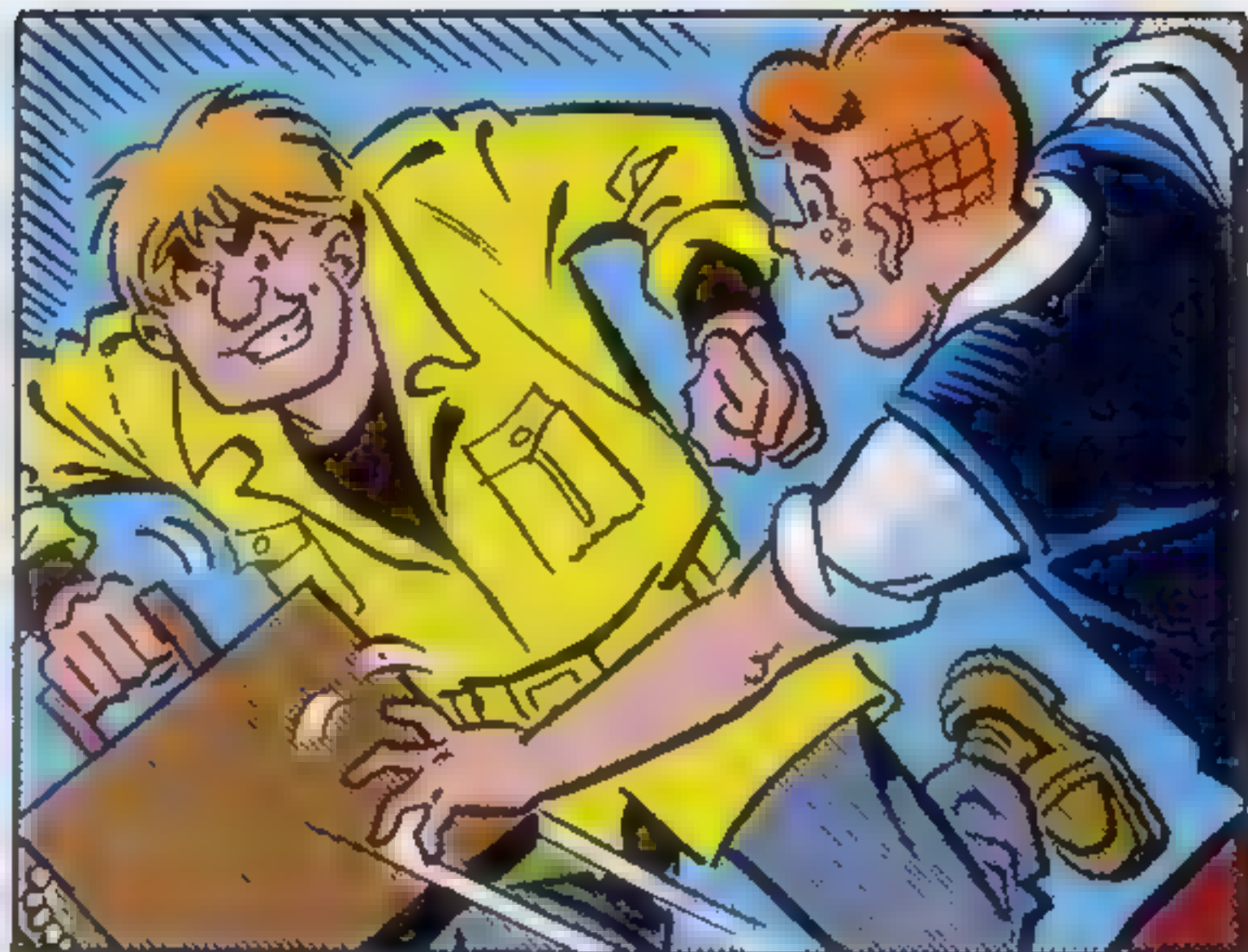
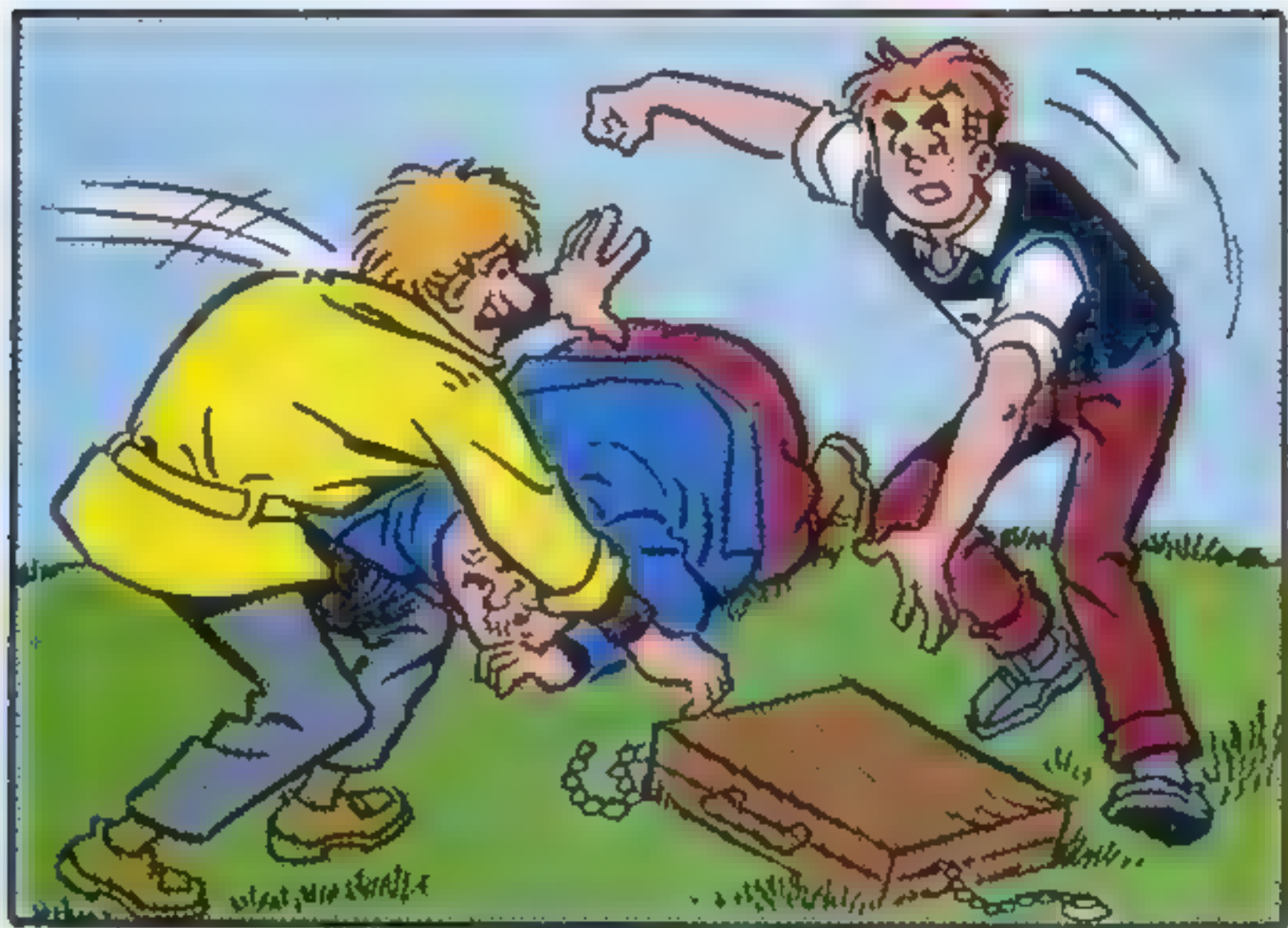




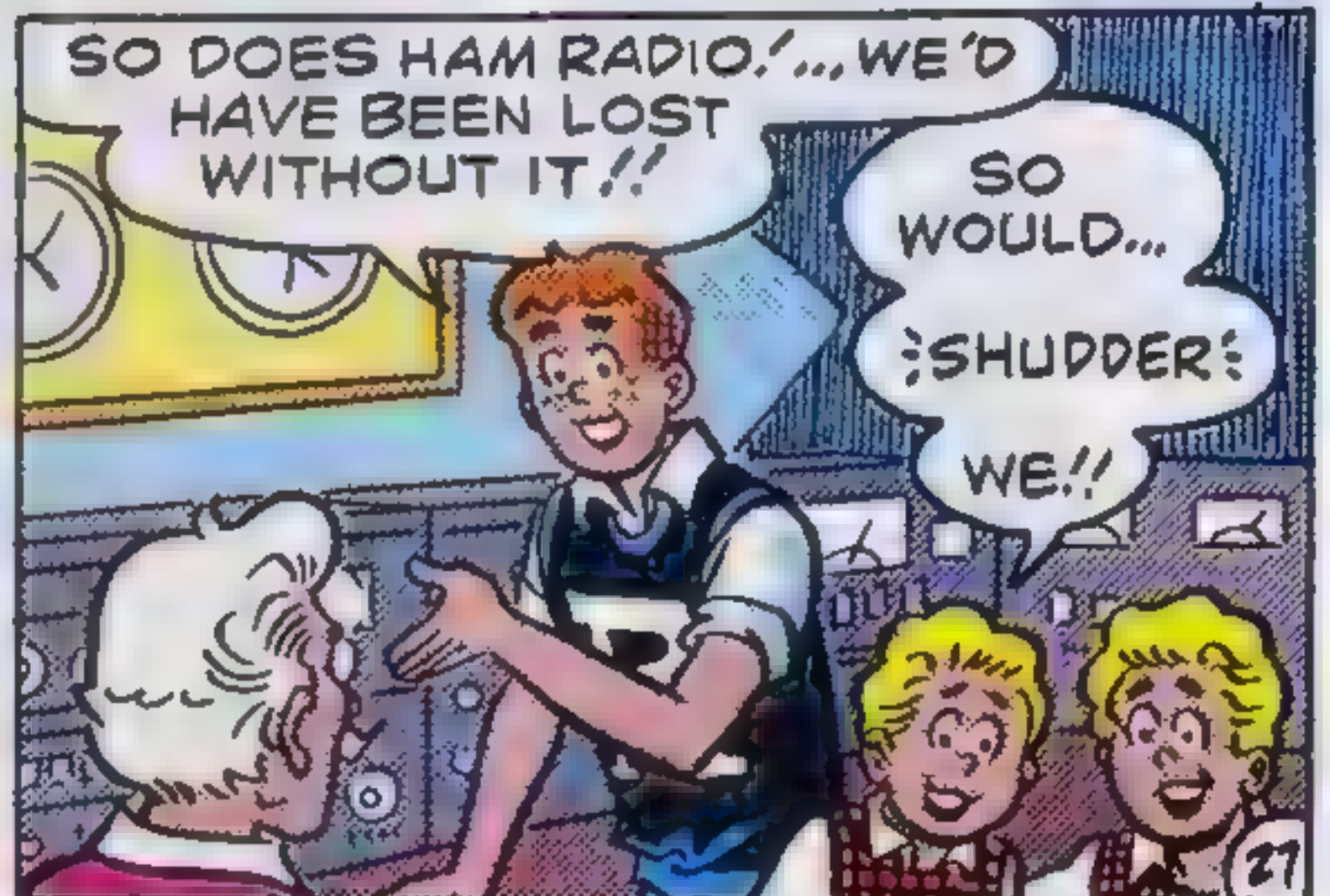
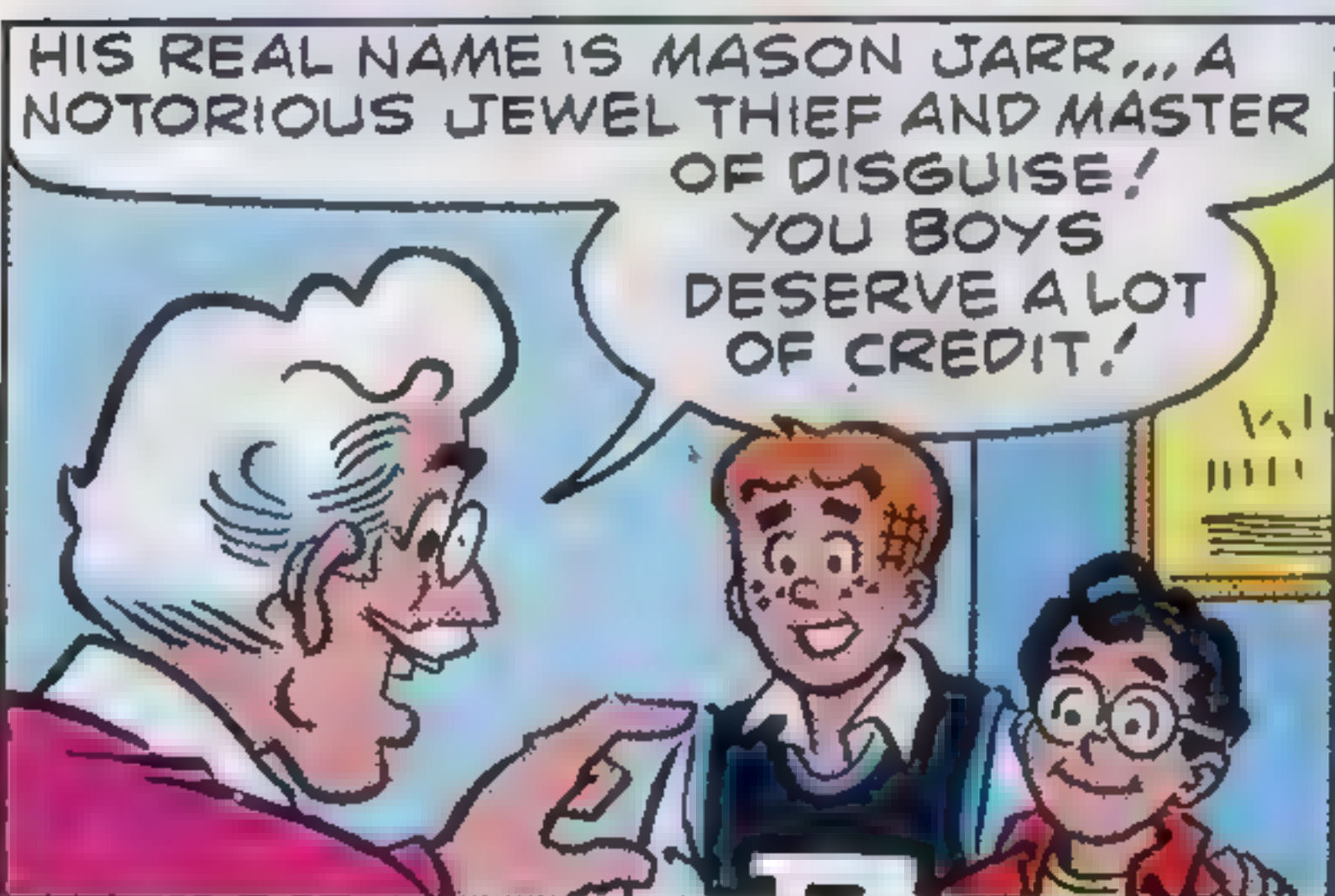
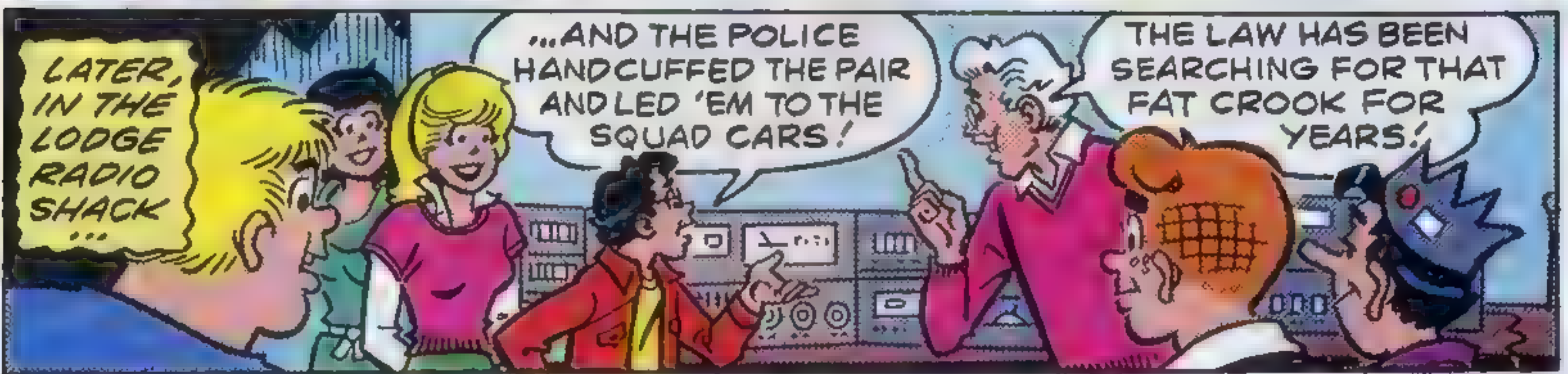
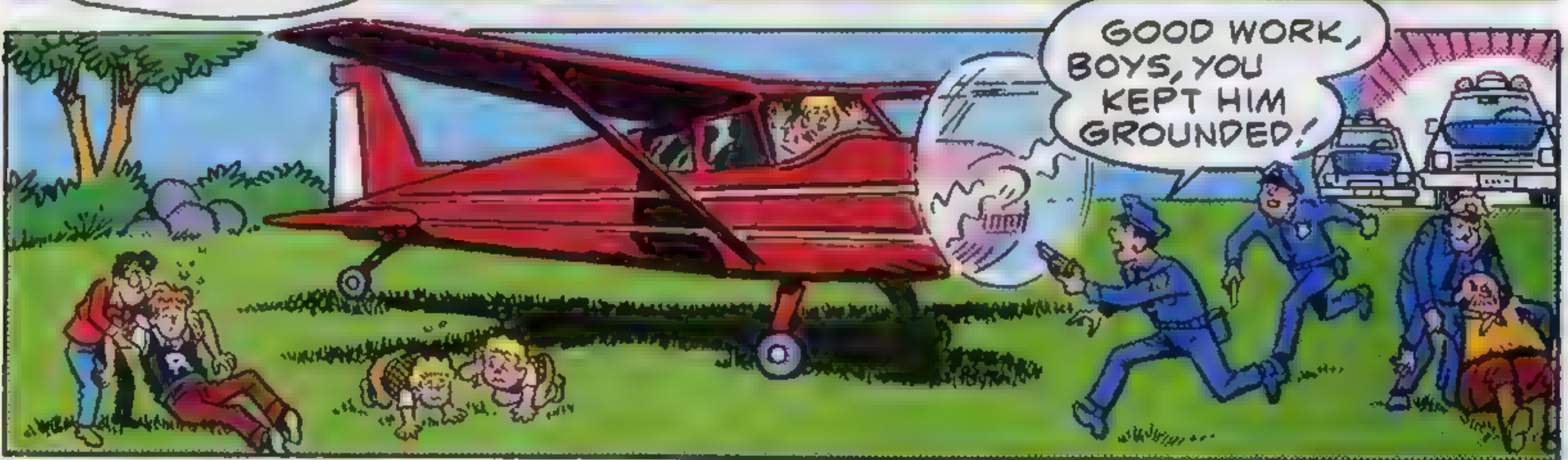
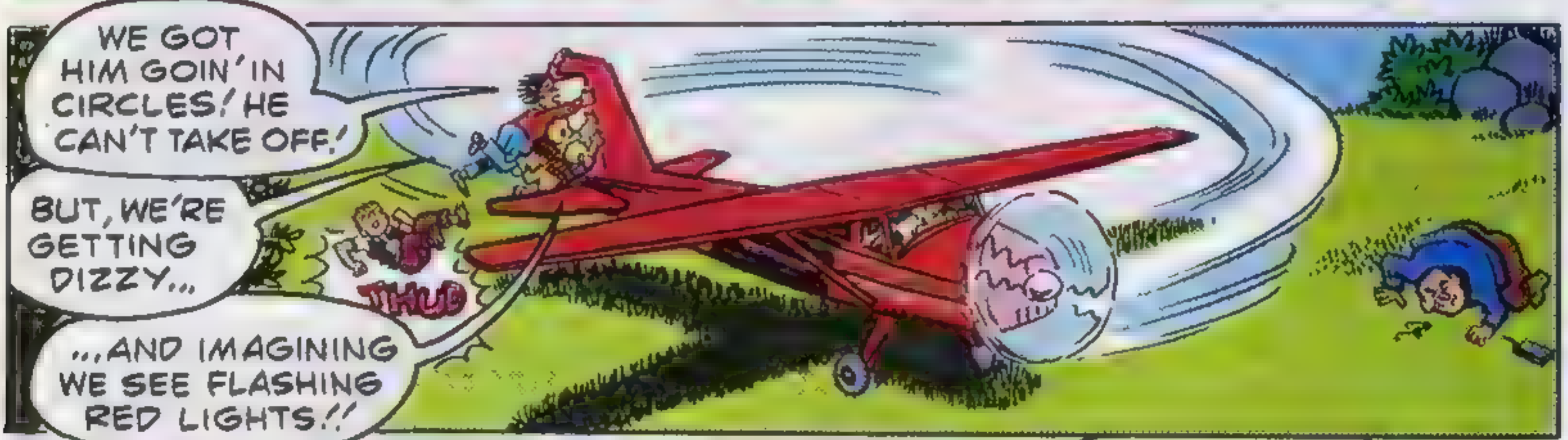
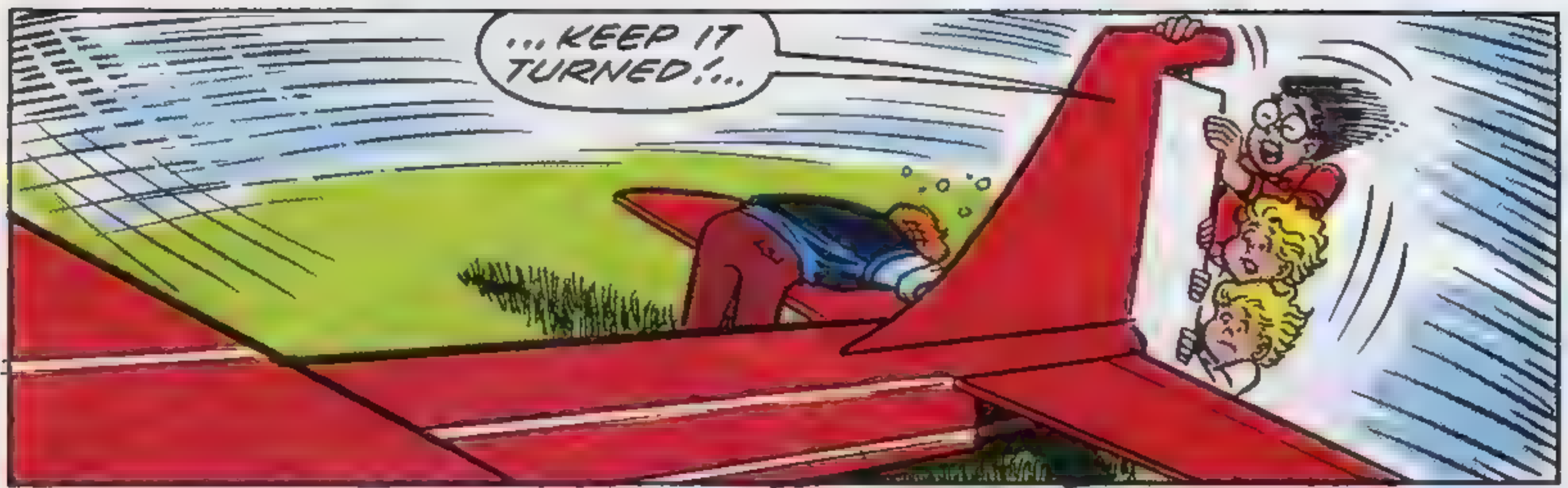




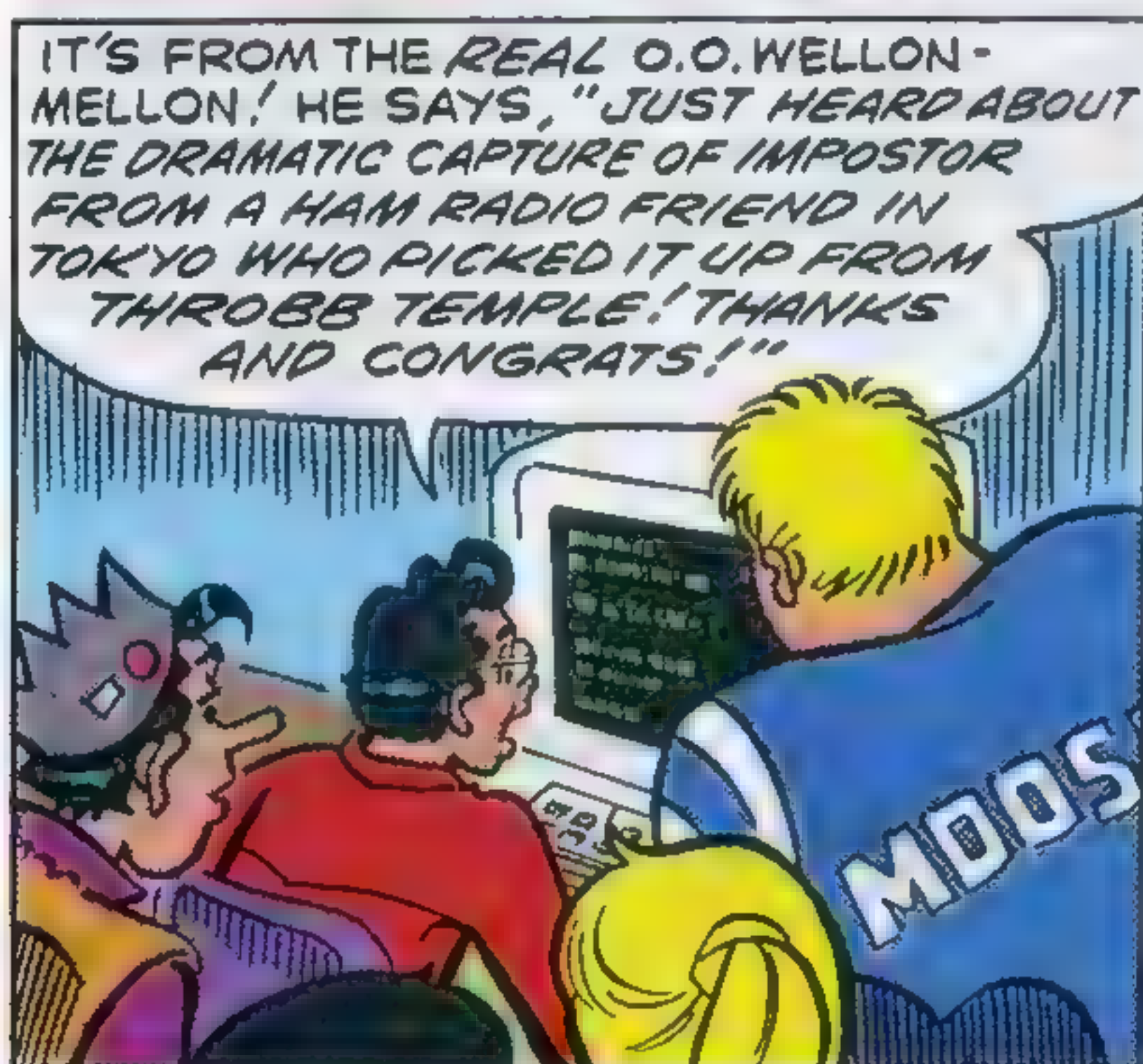
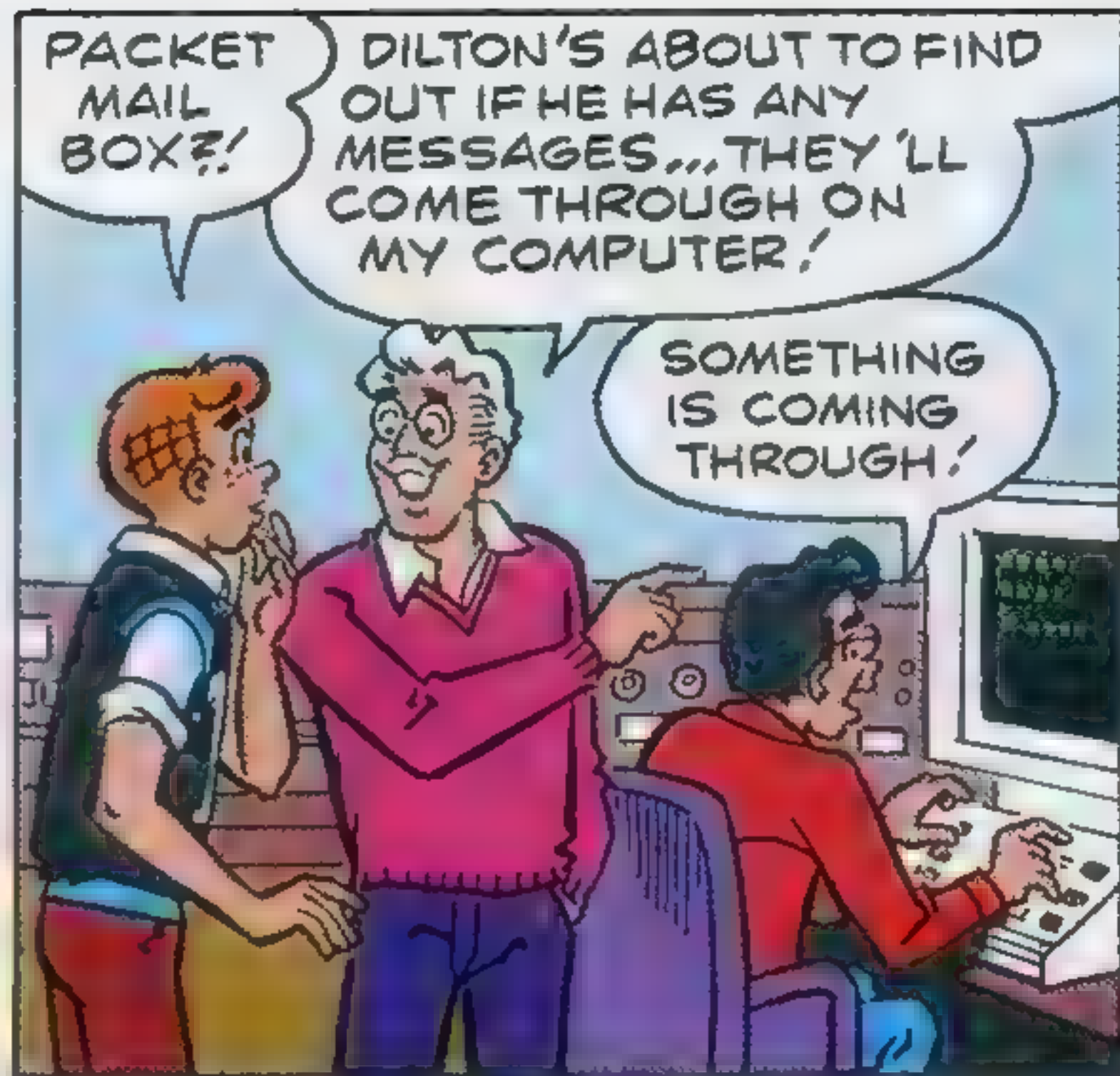
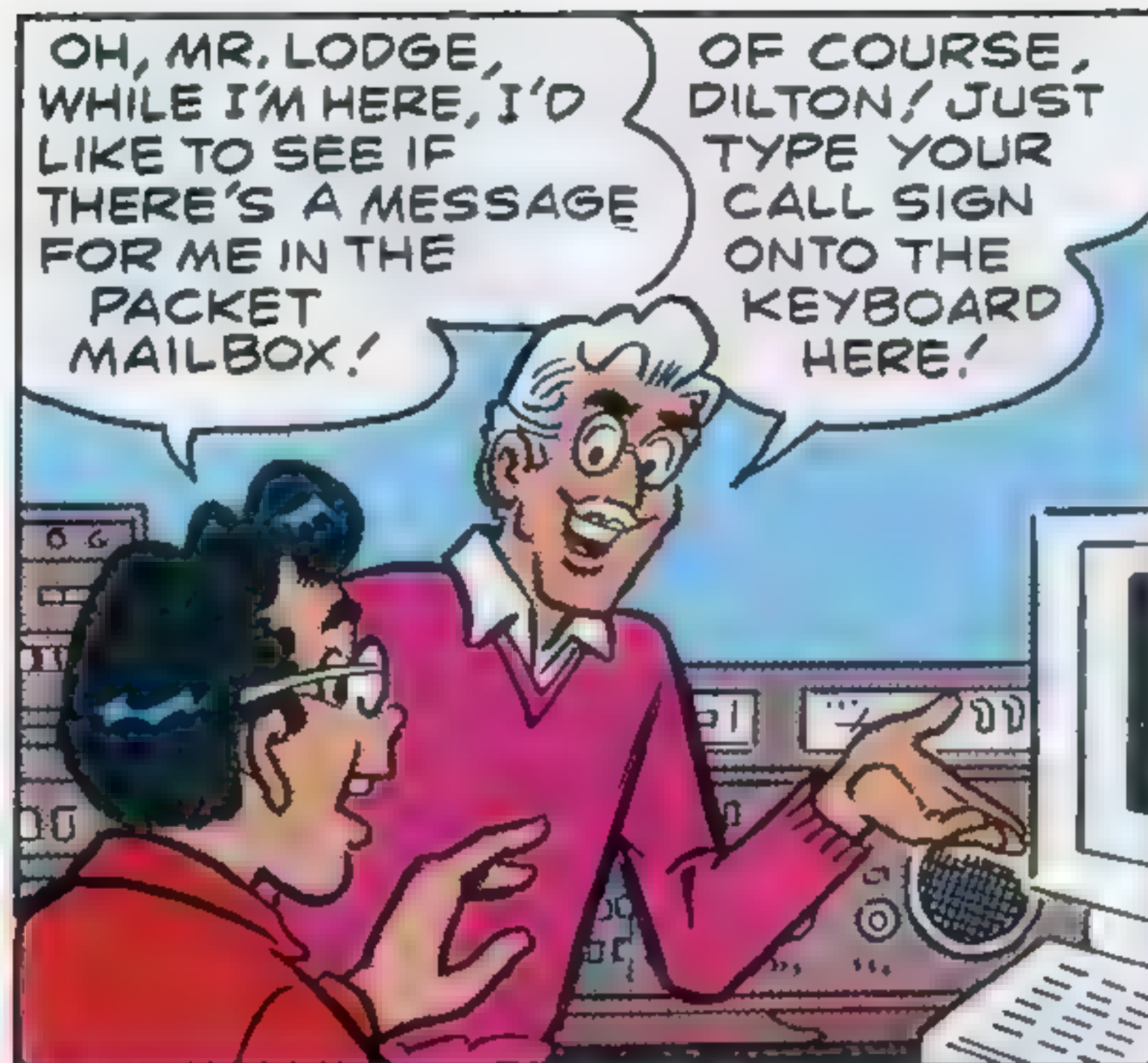






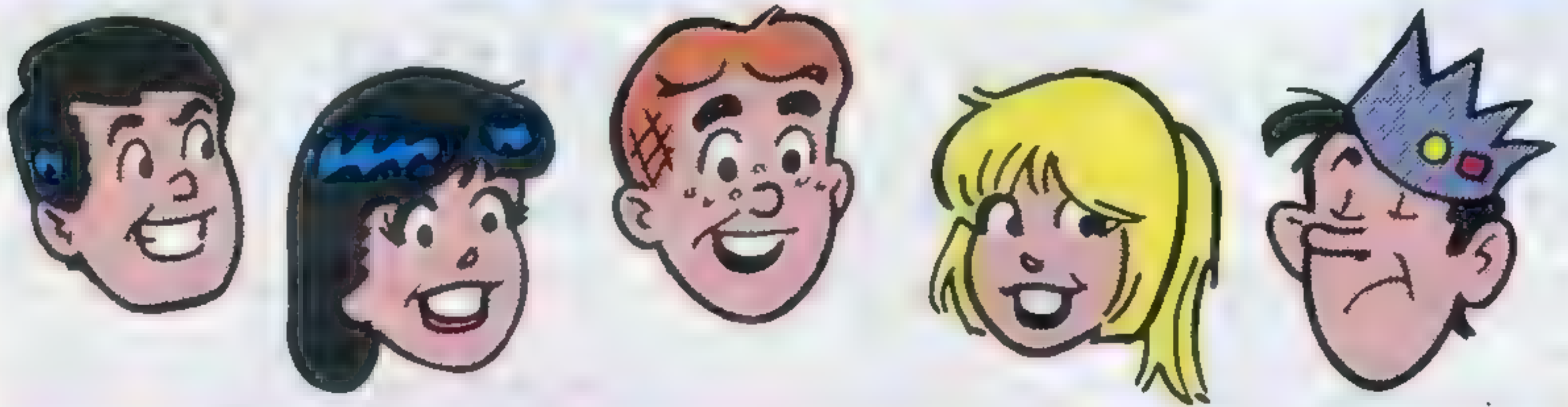








# HAM RADIO FACTS



**THE FIRST HAM** was Guglielmo Marconi, the man who invented radio. He never had a license, but always considered himself a Ham at heart.

**WHAT DOES HAM STAND FOR?** Nothing. Hams are formally known as **AMATEUR RADIO OPERATORS**, "amateurs" because they use their radios for fun, not for money. The word "ham" is about as old as the hobby itself and its origins are uncertain. But it's a title all amateurs wear with pride.

**HAM RADIO LICENSES** are issued in the U.S. by the Federal Communications Commission, a government agency (in Canada, it's the Department of Communication). You need a license to get on the air. The easiest classes of licenses to get are the Novice Class and the Technician Class. The licenses are good for ten years, and the Novice license is free. These licenses give a new Ham a taste of what Amateur Radio has to offer. Other classes of license provide bigger bites. Getting a license means studying about how radios work and some licenses require passing tests on Morse Code. Many Ham Radio clubs sponsor training courses and test sessions.

**HOW MANY HAMS ARE THERE?** Around the world, there are more than two million Ham Radio operators. There are about 500,000 Hams in the United States.

**HOW FAR CAN HAMS TALK?** Hams can talk with other Ham operators all over the world. There have even been a few Ham astronauts who have operated from space! They talked to other Hams back on Earth!

**WHAT DO HAMS TALK ABOUT?** Just about anything. Most Hams exchange information about their hometowns, the kind of radio equipment they're using, how old they are and whether they go to school or work at full-time jobs. Many Hams find they have things in common, and there's really no limit to what they'll talk about then.

**HOW MUCH DOES IT COST?** While it's possible to spend thousands of dollars on radio equipment, many Hams get on the air and have a great time with used equipment that's often sold for \$150 or less.





# WHAT SOME OF THE WORDS MEAN...



**Ham** - A person licensed by the Federal Communications Commission (FCC) to be an Amateur Radio Operator.

**Rig** - The radio equipment used by a Ham to communicate with other Hams. The basic equipment consists of a radio receiver to "listen" with, a transmitter to "talk" with, and an antenna to send a radio signal out into the air or pick it up out of the air. Nowadays, modern "rigs" often have the transmitter and the receiver in the same unit, and some even have a small antenna built in.

**Ham License** - The official document issued by the FCC giving permission to operate an Amateur Radio station. To get a Ham License (also called an Amateur Radio License) you must pass a test authorized by the FCC. The Novice Class exam includes a Morse Code test, but the Technician Class exam does not, and all exams have questions on the simple rules about operating a Ham station. Most people start with the easiest ones, the Novice and Technician, and as they gain more experience, they progress up the ladder to General Class, Advanced Class and then the ultimate Ham license, the Amateur Extra Class. Each higher grade of license allows you to use more amateur frequencies and to communicate with other Hams in many different ways.

**Radio Shack** - The name used to describe the place where a Ham keeps his radio station. In the early days of radio, a Ham often operated his radio equipment from a small shed or shack in the backyard instead of inside the house. Times have changed, and today most Hams have their radio equipment in the den, basement, attic or even tucked away in a spare closet in the house, but it's still "the shack" to a Ham.

**Packet** - High-speed communication from one

computer to another over the airwaves. This is one of the newest ways Hams use to "talk" to each other. A Packet Mailbox is a system Hams use to leave messages for each other even when the other Ham isn't around to receive the message. Just check your "mailbox" whenever you can, to see if there's any "mail" (messages) for you. Packet is the Ham's way of communicating by computer over the radio that is even more fun than talking by computer using a telephone modem.

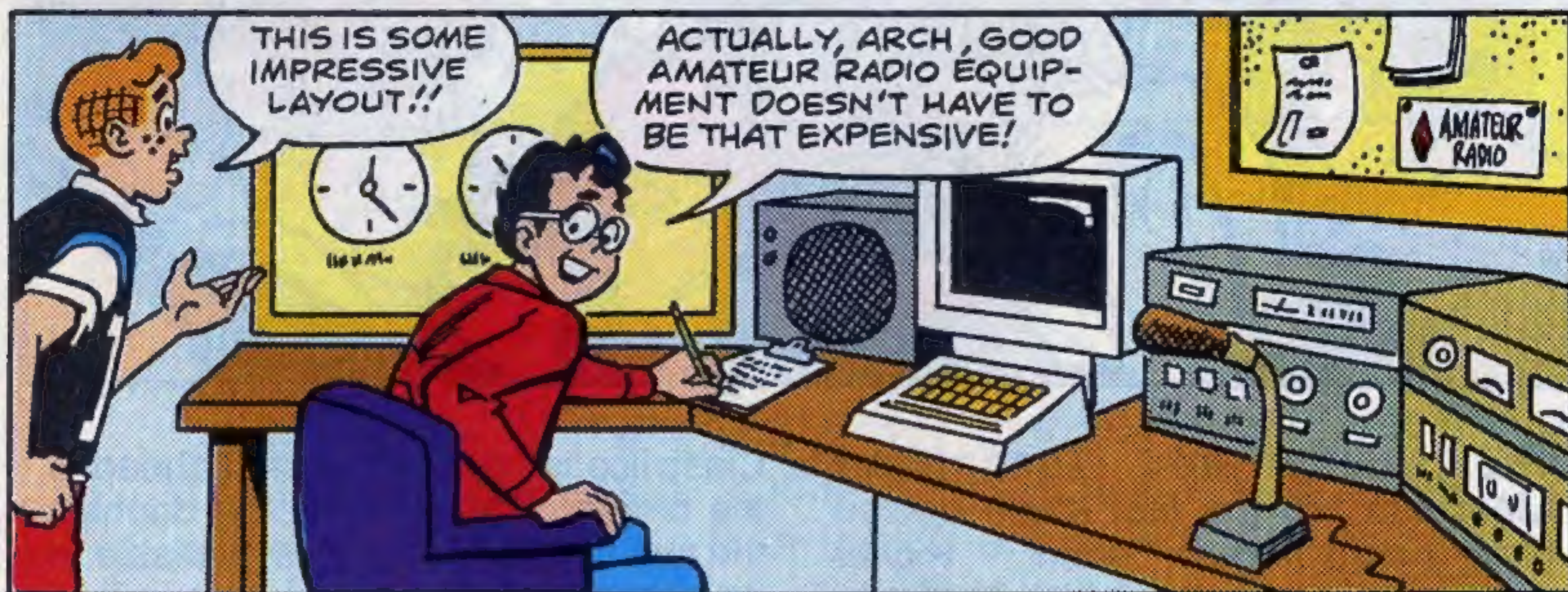
**Phone Patch** - A Ham's way of connecting his Ham Radio equipment to the telephone lines. If this is done automatically, the system is called Autopatch. Using Autopatch, it's possible for a Ham to make phone calls from his car or even from a Walky-Talky as he or she is walking down the street or riding the bus. The equipment that makes this possible is usually provided by a local radio club.

**Repeater** - An automatic relay station that picks up a signal from your small transceiver and re-transmits it much stronger and louder from a high antenna. The idea is to let you talk over longer distances than you normally could using a small, inexpensive rig. Repeaters can even be connected together or "linked" to extend your talking range to hundreds or thousands of miles just using a hand-held transceiver.

**OSCAR** - Orbiting Satellite Carrying Amateur Radio. Hams around the world have built and had launched into Earth orbit dozens of communications satellites. Some of these satellites have been repeaters which are able to re-transmit Ham signals over thousands of miles, and across oceans using simple low-power equipment. The nickname OSCAR is used to refer to those Ham satellites built by Hams in non-Communist countries in Europe, North America and Asia. Russian Hams have also built and had launched numerous Ham satellites.



# THE NOVICE AND TECHNICIAN LICENSES



Your first Ham Radio license is your ticket to adventure on the airwaves. You may not catch any crooks, but you will get the chance to meet interesting people all over the world...from school kids in Great Britain or New York City to farmers in Kansas or Russia. The Novice and Technician Licenses--the easiest Ham "tickets" to earn--are your first steps.

Today's Novices and Technicians may sample just about everything Ham Radio has to offer--from satellite communications and computerized "Packet Radio" to "chasing DX," hunting down rare stations in exotic countries. Plus, you have the chance to meet and talk with fellow Hams in your hometown using hand-held radios and "repeaters" to stay in touch. There's a Novice voice "radio frequency band" on 28 megahertz (MHz) giving you the chance to actually talk with people all over the world! Novice bands also offer Morse Code contacts up to a few hundred miles away on 3.5 and 7 MHz, and up to several thousand miles away on 21 and 28 MHz. If you want to talk by computer or hook up to a computer "bulletin board," there's also plenty of packet radio activity to be

found on bands that both Novices and Technicians can use.

Technicians may talk on the 144, 222 and 440 MHz bands where repeaters can extend the range of a low-powered hand-held radio to 50 or 60 miles or more. (Novices may talk on the 222 MHz band, too.) These bands are also great places to meet local Hams who can introduce you to the never-ending variety of Ham Radio and help you work toward a higher class license. Many a lifelong friend has been made on Ham Radio repeaters.

There's a huge chunk of frequencies available to Novices and Technicians at 1.2 gigahertz--a funny word with a big future. The Novice and Technician band here, and the Technician 440 and 902 MHz bands include a couple of Amateur TV channels (Yes, you can send your own TV signals!) Technicians can also talk on the popular 50 MHz band, on 902 MHz and a number of other bands that give you the chance to be part of some of Ham Radio's newest developments. (What are they? We don't know. They haven't happened yet!)





**The Novice and Technician Licenses** are the first steps on the Ham Radio license "ladder." Higher classes of license are a little harder to earn, but each brings with it new privileges and opportunities. Here's how the "ladder" works:

**The Novice License:** Receive Morse Code at five words per minute (wpm) and pass a 30-question written test on Ham Radio rules, operating practices and basic electronics.

**The Technician License:** Just a written test that covers electronics and operating practices at frequencies above "short wave," where you'll get full amateur privileges, including permission to operate on the popular "two-meter" repeaters. By passing the same code test as for a Novice license you get Novice privileges, too.

**The General Class License:** Gives you some of everything, including voice privileges on all of the "shortwave" Ham bands for round-the-world communications. You have to know Morse Code at 13 words per minute and pass another written test to make sure you understand your new privileges.

**The Advanced Class License:** Some people say this test is the toughest of all--50 questions on pretty complicated electronics (no code test if you're already a General). But the Advanced

Class license puts you a step ahead of the crowd. And it practically doubles the shortwave frequencies available to you for voice contacts, giving you a less crowded area for chatting with friends around the world--or for making new friends.

**The Amateur Extra Class License:** This is the top rung on Ham Radio's licensing ladder. The Extra Class license gives you all operating privileges on all amateur frequencies, along with certain frequencies reserved just for you and your fellow Extras. And if you're 18 or older, it qualifies you to give exams for all classes of Ham Radio licenses. Naturally, it takes a lot of work to earn this license--a 20 word per minute Code test and yet another written exam.

These higher license classes can take quite a bit of time and study to earn, but don't worry--all amateur licenses--from Novice to Extra--are issued for ten years, and may be renewed. And the Novice and Technician licenses give you the all-important first steps up the ladder.

All in all, there's a new world of Amateur Radio out there for today's Novices and Technicians. To find out more, join the Archie Radio Club (use the tear-out card)--or ask your teacher or group leader to request a copy of the Ham Radio video, "The New World of Amateur Radio" from ARRL.





# HAM WORD SEARCH!

There are 38 common Ham words hidden in the puzzle below. Can you find them all?

F T I S Y A R E C E I V E R A E O P H U P C A X D  
C R A E A G E L S Q U I F O D R A C O D A E V O S  
C A N R E T T I M S N A R T I O T O K I C P A R E  
A N R O F R A N S L Y K N A S A V R E H K S U B N  
L S E T V N P O S C A R U T P E O I P T E E R F O  
M C A A L I B Y E A M I N O E W E A C I T R H U H  
A E M R A M C Q U R E A T R T N R N I A M I A Q P  
M I T E C E O E Q D N U F E H G N E M I A R M S D  
A V E N A N T P T E A Q N X E N I A O M I P P I A  
T E L E G R A P H K E Y E L A W N E C I L E S G E  
E R A G I R A F F E C L E T M O I D A R B C I N H  
U E C Y A R E R O N E T T E D I T A O B O D N A H  
R O Z C T E E P E K H A M S H A C K L T X E G L A  
R T A N R T P G B E H C T A P E N O H P S K I S N  
A E M E S A R O M E O U E D A R O E E S N E S L D  
D K E G S E S A E L U R S T E M W D R E A Y L R Y  
I C N R M P H A N D H E L D U N I T I N L A L M T  
O A W E W E R E A D D R A O B T I U C R I C A P A  
A P P M O R S E C O D E K B I U W A E S N E C I L  
H A O E Q E H T U O S R C O S Q O X R L A O C R K  
C O M P U T E R C M O C N N O S S O L I D C O P Y

Amateur  
Amateur Radio  
Antenna  
Auto Patch  
Callsign  
CB Radio  
Circuit Board  
Computer  
DX  
DXpedition  
Emergency Generator  
Emergency Network  
FCC

Ham  
Ham Shack  
Hand Held Unit  
Handy Talky  
Headphones  
Key  
License  
Morse Code  
Novice  
Oscar  
Packet  
Packet Mail Box  
Phone Patch

Q Signals  
QSL Card  
QSO  
Receiver  
Repeater  
Rig  
Rotator  
Solid Copy  
Telegraph  
Telegraph Key  
Transceiver  
Transmitter



# HAM RADIO'S «SECRET» CODE!



Morse code is used by many Hams. It's Ham Radio's "secret" language. The Morse Code is easy to learn. The best way to learn it is by the way it sounds. For example, think of the letter A as the sound "di-dah," made when you say "dit" and "dah" together quickly.

Computer games and audio cassettes are available to help you learn Morse Code, but if you want to start by teaching yourself some letters--maybe your own name--here's the whole Morse Code. Now you're in on the secret!

A	di-dah	N	dah-dit
B	dah-di-di-dit	O	dah-dah-dah
C	dah-di-dah-dit	P	di-dah-dah-dit
D	dah-di-dit	Q	dah-dah-di-dah
E	dit	R	di-dah-dit
F	di-di-dah-dit	S	di-di-dit
G	dah-dah-dit	T	dah
H	di-di-di-dit	U	di-di-dah
I	di-dit	V	di-di-di-dah
J	di-dah-dah-dah	W	di-dah-dah
K	dah-di-dah	X	dah-di-di-dah
L	di-dah-di-dit	Y	dah-di-dah-dah
M	dah-dah	Z	dah-dah-di-dit
1	di-dah-dah-dah-dah	6	dah-di-di-di-dit
2	di-di-dah-dah-dah	7	dah-dah-di-di-dit
3	di-di-di-dah-dah	8	dah-dah-dah-di-dit
4	di-di-di-di-dah	9	dah-dah-dah-dah-dit
5	di-di-di-di-dit	0	dah-dah-dah-dah-dah

Period (.) di-dah-di-dah-di-dah

Question Mark (?) di-di-dah-dah-di-dit